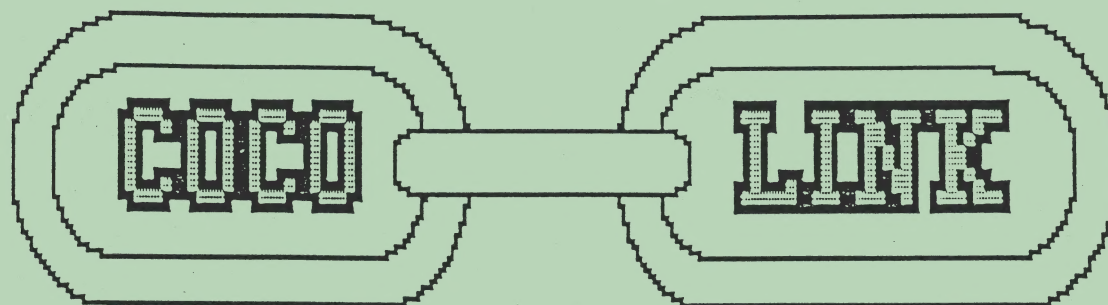
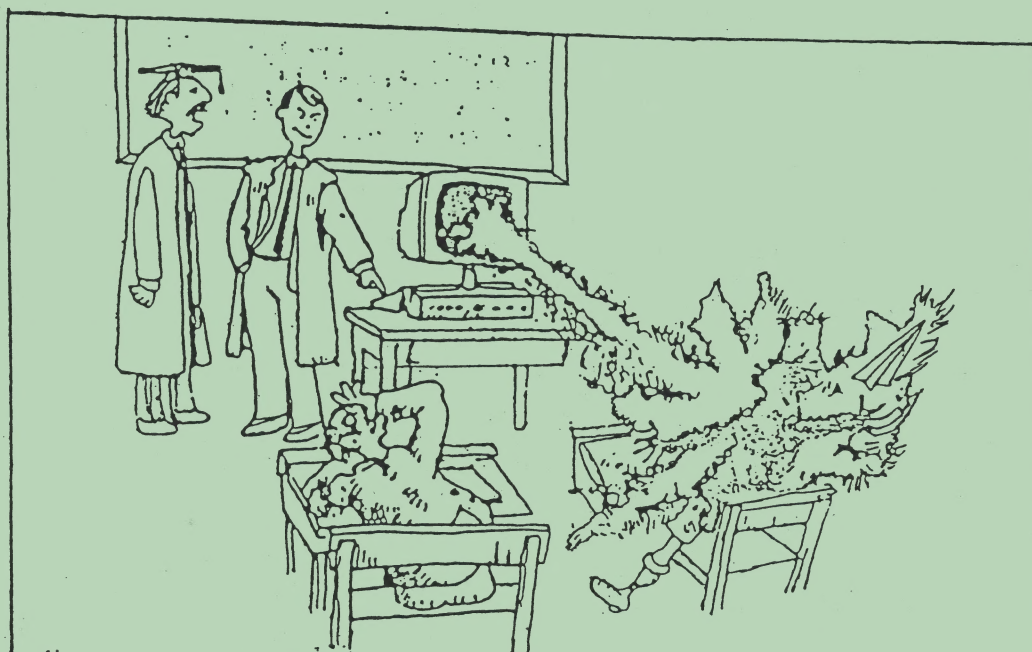


SEP/OCT 93

Vol 1. No.5



The Colour Computer Magazine



'In my day, Mr Hobson, we used to throw chalk at them!'

Featuring:

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REPORT WRITER GRAPHICS
SPEEDWAY UP YONDER
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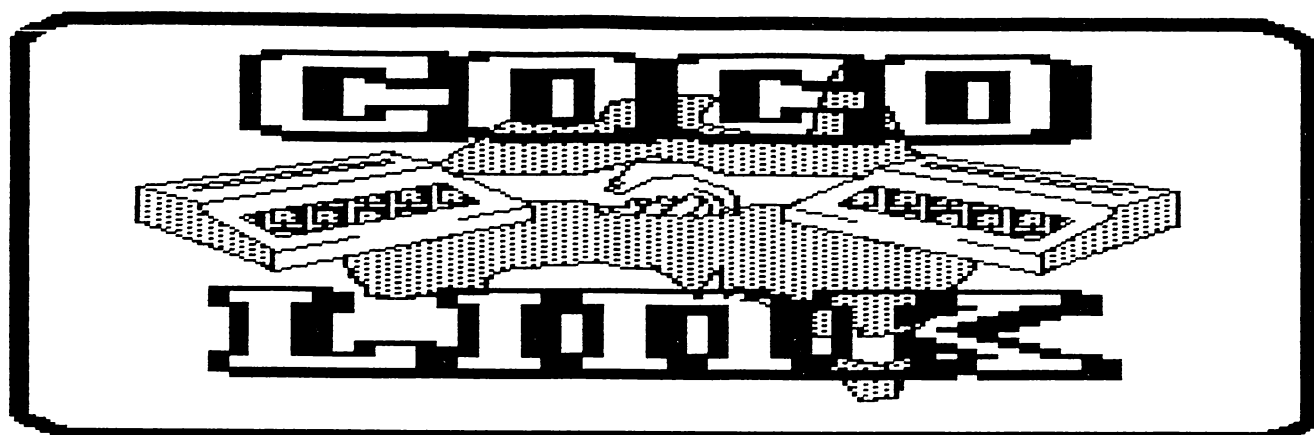
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.....

Postage is \$5 for software and actual charges for hardware, tapes are also available for the coco 1, 2 and 3.



EDITOR: Fred Remin

DEPARTMENTS:

Remins Rambling	3	Link-Up	6
For Sales and Wanted	31	CoCoist Contact List	41

COLUMNS:

Up Yonder	8
Beginning With OS-9	18
<u>Reviews:</u>	
Speed Racer & Whirlybird Run	5

FEATURES:

Report Writer	10
Speedway	24
Secrets of the CoCo	26
Animated Bugs	27
Graham's Graphics	34

ADVERTISERS:

REMCOMS	Inside Cover	P.D. Software	40
SUNDOG	17	Casino Electronics	30
RICK'S ENTERPRISE	23	Computer Hut Software	30
PCCC	39	National OS9 User Group.....	39
JWT	39	Alternative Copier Servicing...	22
Bob Devries	5	MM/1	9

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Aemin's Ramblings

Well here we are again, another issue of CoCo-Link and getting stronger all the time.

The first thing that you should have noticed about this issue is the quality of the print in the magazine. It has been done on an IMPACT-LS800 laser printer. Yes, you read it right, a laser printer. I, like so many other CoCoists, used to look at the capabilities of some of those other machines in the area of the printed word and wished that I had the same. Well I have found that we do have those capabilities.

All that is required is that you set the drivers in your word processing package to EPSON/IBM mode and away you go. Be aware however that not ALL laser printers will give you this emulation, in fact some of the older ones are IBM only. Another consideration is the amount of buffer space available in the printer. The LS-800 that I have used for this magazine has only 384K of buffer space, this means that I can not use my favourite programme, Max-10, as I have in the past. This is because with only 384K the printer is not capable of storing the amount of information required by a full graphic page of Max-10.

It must be remembered though, that the LS-800 is a very old printer and that the more modern ones will have a couple of Meg of buffer space, therefore being able to cope with a full graphic page as sent out by Max-10 and CoCo Max III.

Does this mean that all future magazines will be done with a laser printer, unfortunately no, the one I am using was 'borrowed' to see if it would work on my CoCo. Maybe if I get some more subscribers and you all buy some software of me, then I may be able to afford one, but that I am afraid is up to you.

Some more good news for all subscribers beginning with this issue is the articles from '68 micro' being incorporated in CoCo-Link. This issue sees the start of a series of articles by Rick Ulland on how to get started with OS-9, reprinted from '68 micros'. Future CoCo-Link magazines will contain selected articles, reviews etc from '68 micros'.

And even more good news, REMCOMS is now the official agent for the MM/1 in Australia, see the ad later in the magazine, and the agent for OWLWARE as well. It seems that REMCOMS, instead of folding like all the others, is in fact increasing the amount of support available for the CoCo.

Well that is about all I have got for my ramblings at this stage, so I will close by saying, keep those programmes and articles coming in, they are now going to the States as well as ensuring that CoCo-Link survives.



REVIEWS



GAMES REVIEW

SPEED RACER :- In this M/L game, you are the driver of a racing car. Although the effect is of sitting just behind the driver, you actually steer the car with the joystick. There are 4 different tracks which have varying degrees of difficulty. Some skill is needed to turn the corners and avoid running into other cars at the same time.

The main skill required is in having the right touch with the joystick. It is very easy to go too fast so as to be unable to avoid crashing as you weave your way through the other cars. The race is over 10 miles circuit and you have to pass over 30 cars in each lap in order to be able to go onto the next. If you don't succeed in this then the race stops.

Should you run for too long on the rumble strips at the side of the track your car stops for a tyre replacement. A mechanic does this in good time. You then have to pull back onto the track and make up for lost time.

The background scrolls through different scenery and is very effective. It is just a pity that on PAL televisions we are stuck with the annoying blue and grey stripe graphics instead of true colours. I believe there is a utility available that puts these type of programmes into PMODE3 and makes them much more colourful. It would look great in full colour.

All in all a good race game. The skill required just to get past lap 1, is enough to make you come back at it a number of times to improve on your last score.

WHIRLYBIRD RUN:-

You have 4 helicopters to shoot rockets and fuel tanks on the hilly terrain below, hitting them gives you so many points to keep going; also you have to avoid the missiles shooting up from the ground as well as other flying craft coming at in large numbers; you fly through different sectors.

A game of skill once again with the joystick as well as as with your eyesight watching everything coming at you from all directions.

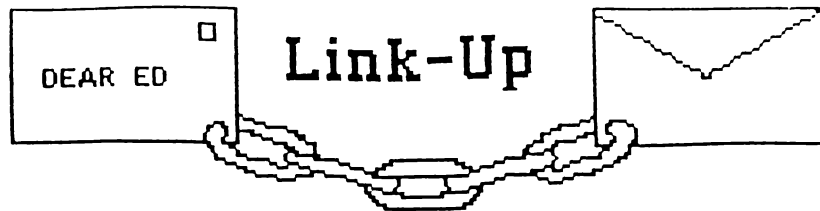
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Dear Fred

Well I have just received my copy of CoCo-Link and must say that so far, I am very impressed with the way that you are publishing them, after going through my past copies of this magazine, (back when Robbie was editor) I must say that the quality has not changed, keep up the good work.

I wish to also say that I have changed my address, so I wish to have it changed in the COCOIST CONTACT LIST, it's as follows;

JOSEPH HESTER
49 TRUSCOTT RD
MOE VIC 3825
PH (051) 271158

I have a little problem that you or other readers may be able to solve for me, I am currently using a COCO3 with 2 DS drives, the controller is from QLD (I cannot remember whom I purchased it from), with "BEE-DOS 80", I also have RS-DOS in the controller, the problem is that using B-DOS on COCO2 I can place the date on the disk, but with the COCO3 the configuration file will not work, I have included the listing in the hope that someone will have the appropriate fix for me (I do know that when the COCO3 went on sale there was a fix for this, but was unable at the time to obtain it);

```
1' BOOT/SYS - BDOS-80
CONFIGURATION FILE
10 GOTO 120
20 FF$=INKEY$:FF$="":PRINT@PP,
MS$;" ";
30 FOR T=1 TO SL:PRINT
CHR$(&HAF);:NEXT:PRINT@PP+LEN(MS
$)+1," ";
40 AA$=INKEY$
60 IF AA$=CHR$(95) THEN RETURN
70 IF AA$=CHR$(8) AND
```

```
LEN(FF$)=0 THEN 40
80 FF$=FF$+AA$:IF AA$=CHR$(13)
THEN FF$=LEFT$(FF$,LEN(FF$)-1)
:RETURN
90 PRINT AA$;:IF AA$=CHR$(8)
THEN PRINT STRING$(SL-LEN
(FF$)+2,&HAF);:PRINT@PP+LEN
(FF$)+LEN (MS$)-1," ";:
FF$=LEFT$(LEN(FF$) -2):GOTO40
100 IF LEN(FF$)=SL THEN RETURN
110 GOTO 40
120 VERIFY ON
130 'DEFUSR0=&HDF6D-X=USR(0)'
this line enables key repeat
140 BAUD(2400)
150 GREEN
160 SLO
170 MS$="DATE (MM/DD/YY) : ":
SL=8:PP=192:GOSUB20:
Y=VAL(RIGHT $(FF$,2)):
M=VAL(LEFT$(FF$,2)):
D=VAL(MID$(FF$,4,2))
180 DATE=(Y*512)+(M*32)+D:
PPOKE&H14E,DATE
190 PRINT:PRINT"BDOS-80 READY":
PRINT:NEW
```

Line 140 "Baud(2400)" Sets the printer's baud rate, which would be replaced with, POKE 150,18,
Line 150 "Green" set a green screen, it can be deleted,
Line 160 "slo", is the same as POKE65496,0. The problem seems to stem from Line 180, in particular - the statement

PPOKE&H14E,DATE

If a reader has the answer to this problem it would be greatly appreciated.

SIGNED

JOSEPH HESTER

Dear ED,

Does anyone have a circuit diagram for a printer buffer that uses the 128K chips from a CoCo 3. Preferably one that uses 256K (memory chips from 2 128K CoCo3's). Anybody's assistance would be greatly appreciated.

Also I own a 64K CoCo 2 Model 26-3127A, could anyone tell me what CN3 and CN4 underneath the keyboard are for? Also J1 - J5 have 128K or 64K, mine is set at 128K but only has 64K chips in it! Why is this so?

D. Rae

I will open this one up to the electronics guru's out there Des, I can remember someone telling me something about your questions some time ago but for the life of me I can not remember what the hell it was.

ED.

Dear Fred,

Enclosed is another Disc of my drawings. I hope that you will enjoy them as much as I did, drawing them. There are a few animated drawings (DINOSAUR, CUCKOO, FISH), and a DATA drawing (HORSE), (these appear in this magazine) and a drawing of my new Computer Workstation (WORKSTA2), plus a programme with music (the music was copied out of the COCO Manual (MEXICAN, plus there are also a few "QUICKIES", which you may be able to use, to fill in small gaps left over on pages of COCO-LINK. I hope they may be of some use to you, and thanks ever so much for your kindness in the past, of publishing quite a few of my drawings in COCO-LINK, it's great to see your work published and my young son (aged 10) is very proud of his old Dad, and loves showing his mates my latest efforts. Thanks again, mate.

As you can see by my drawings, I have a good imagination, but I could get nowhere without Arthur Williams, of Harrington, NSW, who encouraged and taught me to draw - he contacted me through your contact page in COCO-LINK, and gave me a programme called PM4FNDXY, by KEIRAN KENNY, another COCO-LINK member, who gave me my screen co-ordinates, from which I make the finished drawing. My thanks go to both these people for their help and continuing encouragement.

Graham,
Your letter portrays everything that CoCo-Link is about, helping each other. By maintaining contact through these pages we all ensure our continued interest and existence in the world of computing. To that end my friend, the CoCo community thanks you, keep those programmes and articles coming and I will keep printing them for all to benefit.

Dear Ed
Keep up the good work old chap. Here are three programmes for the competition. This is my first attempt at doing something real with my computers and it took about 12 months with some help (it pays to be in a user group).

J McNabb

John,
Thank you for your kind words, but again I must reiterate that the real thanks must go to people such as yourself for getting off their \$%&#" and doing something to keep the CoCo alive. Your submissions will be added to the many I have received so far and be judged with them. Keep working on your trusty CoCo and send in a few more for the magazine.

ED



First off, I have to give Fred a pat on the back for CoCo-Link. It is a very good publication! I just received numbers 2 & 3 of volume 1 and have a few comments:

1) The use of the word "color" versus "colour" just doesn't occur over here! The ONLY place the word "colour" occurs is in British (and a few Canadian and Australian, though very few of those make it over here) publications. So I guess "color" is perfectly good "American English". There are a few other expressions which are a bit odd also, but I'd imagine you find some of my expressions a bit odd also!!

2) For Rennay Bamford on using the DMP106 with Deskmate. There shouldn't be a problem! Make sure you have chosen a DMP105 or 106 for a printer from the driver listing. Next make sure your 106 is NOT in IBM mode! The only other item that may be overlooked is the baud rate. The 105/106 transfer at either 600 or 2400 baud. This is set by the switches on the back of the printer (refer to your owners manual or the sticker over the switches). Lastly, if you are using a serial to parallel converter, the printer MUST be set to IBM mode to select the parallel port. You may have problems with the printer drivers in this case, but they should work fine.

3) I can't stress Fred's statement in number 3 enough: the CoCo is capable of almost anything! There are limitations to it, like it isn't the best platform for desk top publishing, but an adequate newsletter CAN be made with it (as Fred has shown). The only real limit is your imagination. I have an IBM clone that I used for page layout work on "Tandy's Little Wonder", admittedly, it does a superior job to anything the CoCo can

produce. However, everything in the book went through my CoCo first! I use Simply Better for all word processing, and also use it for my telecommunications work and to keep my books on. While it lacks the resolution in graphics for really good DTP, it is (in my opinion) as good or better than the IBM with text based applications..... and is my preference!

Now for some really good news. Shortly after writing my last column for Fred, and finishing "Tandy's Little Wonder", I discovered "The Rainbow" would be ceasing publication. I actually found out a little ahead of others, as when page count of Rainbow dropped to 16 I inquired about possibly buying the magazine out. Mr Falk called me a few days after receiving my letter and we discussed Rainbow's future. It turned out that we couldn't reach an acceptable agreement for purchasing Rainbow. In the course of discussing the idea with several advisers, the idea of starting a new magazine came up. In order to survive into the future, Rainbow would have to be changed dramatically anyway, so why not start from scratch? I thought on this for a few weeks, and then announced the coming of "the world of 68' micros".

"The world of 68' micros" (all lowercase, micro letters!) would support the Tandy Colour Computer as well as a number of OS-9 68000 computers available here in the US. There is about an equal balance between OS-9 and Disk Basic support present. I expect interest in OS-9 (6809 and 68000 versions) to grow, but there will always be Disk Basic support as long as there is demand for it. Eventually, support for various Motorola "68" series microcontrollers/processors and other operating systems will be

THE MM/1 IN AUSTRALIA

added as the need arises and space allows.

Because of currency differences, airmail charges, etc., I don't expect to ever have a large Australian readership (anyone interested can send an International Money Order for \$35 to FARNA Sytems PB, Box 321, Warner Robins, GA 31098). For this reason, I have made an agreement with Fred Remin to allow reprints and/or excerpts of articles to be published in CoCo-Link, or he can just use 68' micros as an information source... however he sees fit. This will ensure Australian CoCo users get timely information from the US without unnecessary costs. Fred has agreed to do the same for me with CoCo-Link. We will be exchanging subscriptions in the future. Each of us will, of course, credit the other and the original author for articles and programs.

I will still occasionally write up a column for you, but doubtfully for every issue of CoCo-Link. 68' micros has a little more coverage and content than CoCo-Link, and takes a bit more work to put together. That is one reason I worked out a somewhat unusual publication schedule - approximatley every six weeks, or eight issues a year. This keeps costs to subscribers down while allowing me time to put each together. When questioned, people just weren't as interested in a bi-monthly, but didn't really want to pay \$30 US or more for a monthly either... so I compromised!

Thats about all for now, more at a later date!

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(No DOS like memory barriers)
-)Strong UNIX compatability
(for students, teachers, professionals)
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-)Avoids pitfalls of MS-DOS
(no configuration hassles)
-)AFFORDABLE
(excellent value for money)

For more information contact REMCOMS.

REPORT WRITER BY G. BYE

I am a teacher at a secondary school in Morwell VIC.

When it came to that time of the year for student reports to be written, everybody seemed to take a long time writing their reports on the schools Macintosh & IBM computers. After hours of writing approximately one hundred and forty reports by hand, I decided to have a go at writing myself a programme to do my reports on my CoCo 3, after numerous versions and modifications I came up with this version, version 12.

When I had completed writing all my reports, in about 20% of the time of writing them by hand, a fellow staff member asked me if he could have a copy of my programme. I told him it was for my "Little CoCo 3" at home, so when I could get on to one of the schools IBM computers I converted it over.

I was surprised to find out that I did not have to change that much. All my TAB settings and printer commands corresponded on the IBM, plus other data and command instructions. After editing the few errors I now have an IBM version of my programme that other staff members are using to write their reports with.

Running under Extended ADOS-3 this programme was written for a specific purpose, that is to write school reports on tractor feed report forms already printed.

To load and run the programme just type in <RUN"RWRITE">, this command will load the programme in a 32 width screen mode with the title, date, version No, when this has finished loading and running, the programme will ask for the date. After you have typed the date in, just follow the on screen instructions. The

programme should be run in uppercase letters.

If anyone has any comments to make on improving the programme, my address is as follows:-

Graham Bye
9 Airlie Bank Rd
MORWELL VIC 3840.

(If you do have suggestions for improvement, then besides sending them to Graham, how about submitting them to the magazine. That way everybody will benefit and you will be doing your bit to ensure that this magazine survives. ED.)

```
10 POKE359,19:POKE360,19:
POKE361,57
20 WIDTH32:CLS:PRINT@38,
"STUDENT REPORT WRITER"
30 PRINT@72,"CREATED BY G.BYE"
40 PRINT@104,"MORWELL REPORTS"
50 PRINT@138,"MAY 15/06/93"
60 PRINT@172,"VER 12.0"
70 PRINT@198,"=====
=====
80 FOR T=1 TO 500:NEXT T
90 WIDTH80:CLS3: POKE359,0
100 REM SEMESTER REPORT
110 LOCATE32,0:ATTR3,2:PRINT
"DATE":LOCATE37,0:ATTR4,3:
PRINT"DD/MM/YY":LOCATE45,0:
ATTR3,2:LOCATE46,0:LOCATE47,0:
LOCATE48,0:LOCATE49,0:LOCATE50,
0:LOCATE51,0:LOCATE52,0
120 LOCATE53,0:LOCATE54,0:
LOCATE55,0:LOCATE56,0
:LOCATE57,0:LOCATE
58,0:LOCATE59,0:LOCATE60,0:
LOCATE61,0:LOCATE62,0:LOCATE63,
0:LOCATE64,0:LOCATE65,0:LOCATE
66,0:LOCATE67,0:LOCATE68,0:LOCAT
E69,0
130 LOCATE70,0:LOCATE71,0:
LOCATE72,0:LOCATE73,0:
LOCATE74,0:LOCATE 75,0:
LOCATE76,0:LOCATE77,0:
LOCATE78,0:LOCATE79,0
140 LOCATE0,1
150 LOCATE37,2:INPUT D$
160 LOCATE22,3:ATTR4,3:PRINT
"STUDENTS NAME":LOCATE 36,3
:ATTR3,2:LOCATE37,3:
LOCATE38,3:LOCATE39,3:
```

```

LOCATE40,3:LOCATE41,3:
LOCATE41,3:LOCATE42,3:LOCATE43,3
:LOCATE44,3:LOCATE45,3:
LOCATE46,3:LOCATE47,3:
LOCATE48,3:ATTR4,3:PRINT"FORM"
:LOCATE53,3:ATTR3,2
170 LOCATE54,3:LOCATE55,3:
LOCATE56,3:LOCATE57,3:
LOCATE58,3:LOCATE 59,3:
LOCATE60,3:LOCATE61,3:
LOCATE62,3:LOCATE63,3:
LOCATE64,3:LOCATE65,3:
LOCATE66,3:LOCATE67,3
180 LOCATE68,3:LOCATE69,3:
LOCATE70,3:LOCATE71,3:
LOCATE72,3: LOCATE73,3:
LOCATE74,3:LOCATE75,3:
LOCATE76,3:
LOCATE77,3:LOCATE78,3:
LOCATE79,3:LOCATE0,4
190 LOCATE22,4:INPUT N$:LOCATE
47,4:INPUT F$
200 LOCATE32,5:PRINT"SUBJECT
REQUIRED"
210 LOCATE22,7:PRINT"<1>
METALWORK      <2>GRAPHICS
<3>PLASTICS    "
220 LOCATE29,9:PRINT"CHOOSE
SUBJECT NUMBER";:INPUT U$
230 U=VAL(U$)
240 IF U>3 THEN 220
250 IF U=1 THEN U$="METALWORK
":LOCATE35,11:PRINT U$
260 IF U=2 THEN
U$="GRAPHICS":LOCATE35,11:PRINT
U$
270 IF U=3 THEN
U$="PLASTICS":LOCATE35,11:PRINT
U$
280 LOCATE22,13:PRINT"UNIT
CODE","ATTENDANCE"
290 LOCATE22,14:INPUT
C$:LOCATE50,14:INPUT A$
300 LOCATE30,16:PRINT"IS THIS
DATA CORRECT"
310 LOCATE30,17:INPUT"IF <Y>ES
OR <N>O ";Z$
320 LOCATE20,18:IF Z$="Y"THEN
330 ELSE 100
330 PRINT#-2,TAB(30)D$
340 PRINT#-2
350 PRINT#-2,TAB(15)N$,TAB(46)
F$
360 PRINT#-2
370 PRINT#-2,TAB(15)U$
380 PRINT#-2
390 PRINT#-2,TAB(15)C$,TAB(45)
A$
400 PRINT#-2
410 PRINT#-2
420 CLS

```

```

430 '-----
-----
440 '              ASSESSMENT
450 '-----
-----
460 LOCATE30,4:PRINT"DESIRED
ASSESSMENT"
470 LOCATE30,6:PRINT"DISTINCT
ION.....1"
480 LOCATE30,7:PRINT"CREDIT
.....2"
490 LOCATE30,8:PRINT"SATISFAC
TORY.....3"
500 LOCATE30,9:PRINT"UNSATISF
ACTORY.....4"
510 LOCATE30,10:PRINT"No ASSE
SSMENT.....5"
520 LOCATE30,12:PRINT"CHOOSE
ASSESSMENT No 1-5"
530 LOCATE30,14:PRINT"ASSESSM
ENT No";:INPUT S$
540 S=VAL(S$)
550 IF S>5 THEN 520
560 IF S=1 THEN PRINT#-2,TAB
(26)"*"
570 IF S=2 THEN PRINT#-2,TAB
(32)"*"
580 IF S=3 THEN PRINT#-2,TAB
(39)"*"
590 IF S=4 THEN PRINT#-2,TAB
(46)"*"
600 IF S=5 THEN PRINT#-2,TAB
(23)"*****"
610 CLS
620 '-----
-----
630 '              WORK REQUIREM
ENTS
640 '-----
-----
650 LOCATE25,4:PRINT"MEETING
WORK REQUIREMENTS"
660 LOCATE31,6:PRINT"SHORT
COMMENTS"
670 LOCATE15,8:PRINT"ALL WORK
DONE
WELL.....1"
680 LOCATE15,9:PRINT"ALL WORK
COMPLETED
SATISFACTORILY.....2"
690 LOCATE15,10:PRINT"MOST WORK
COMPLETED.....
3"
700 LOCATE15,11:PRINT"INCONSIS
TENT---SOME
MISSED.....4"
710 LOCATE15,12:PRINT"INADEQUA
TE AMOUNT OF WORK COMPLETED..
.....5"
720 LOCATE15,13:PRINT"LITTLE
WORK COMPLETED.....

```

```

.....6"
730 LOCATE15,14:PRINT"ALL WORK
SET COMPLETED
SATISFACTORILY.....7"
740 LOCATE15,15:PRINT"NO
ASSESSMENT.....
.....8"
750 LOCATE27,17:PRINT"CHOOSE
REQUIREMENT No 1-8"
760 PRINT#-2
770 PRINT#-2
780 PRINT#-2
790 LOCATE30,19:PRINT"REQUIRE
MENT No";:INPUT RS
800 R=VAL(R$)
810 IF R>8 THEN 750
820 IF R=1 THEN PRINT#-2,TAB
(3)"ALL WORK DONE WELL"
830 IF R=2 THEN PRINT#-2,TAB
(3)"ALL WORK COMPLETED
SATISFACTORILY"
840 IF R=3 THEN PRINT#-2,TAB
(3)"MOST WORK COMPLETED"
850 IF R=4 THEN PRINT#-2,TAB
(3)"INCONSISTENT--- SOME
MISSED"
860 IF R=5 THEN PRINT#-2,TAB
(3)"INADEQUATE AMOUNT OF WORK
COMPLETED"
870 IF R=6 THEN PRINT#-2,TAB
(3)"LITTLE WORK COMPLETED"
880 IF R=7 THEN PRINT#-2,TAB
(3)"ALL WORK SET COMPLETED
SATISFACTORILY"
890 IF R=8 THEN PRINT#-2,TAB
(3)"NO ASSESSMENT"
900 '-----
-----
910 '                ATTITUDE
920 '-----
-----
930 CLS
940 LOCATE28,1:PRINT"ATTITUDE"
950 LOCATE26,3:PRINT"CHOOSE
FROM"
960 LOCATE23,5:PRINT"EXCELLENT
.....A"
970 LOCATE23,6:PRINT"VERY GOOD
.....B"
980 LOCATE23,7:PRINT"GOOD.....
.....C"
990 LOCATE23,8:PRINT"SATISFACT
ORY....D"
1000 LOCATE23,9:PRINT"CO-OPERA
TIVE....E"
1010 LOCATE23,10:PRINT"HELPFUL
L.....F"
1020 LOCATE23,11:PRINT"DETERMI
NED.....G"
1030 LOCATE23,12:PRINT"FAIR...
.....H"

```

```

1040 LOCATE23,13:PRINT"INCONSI
STENT....I"
1050 LOCATE23,14:PRINT"POOR...
.....J"
1060 LOCATE23,15:PRINT"UNCO-OP
ERATIVE..K"
1070 LOCATE23,16:PRINT"NO-ASSE
SSMENT...L"
1080 LOCATE23,17:PRINT"UN-SATI
SFATORY.M"
1090 LOCATE23,19:PRINT"WHICH A
TTITUDE A-M"
1100 PRINT#-2
1110 PRINT#-2
1120 PRINT#-2
1130 LOCATE26,21:PRINT"ATTITUD
E No";:INPUT TS
1140 T=ASC(T$)-64
1150 IF T>13 THEN 1090
1160 IF T=1 THEN PRINT#-2,TAB
(25)"EXCELLENT"
1170 IF T=2 THEN PRINT#-2,TAB
(25)"VERY GOOD"
1180 IF T=3 THEN PRINT#-2,TAB
(25)"GOOD"
1190 IF T=4 THEN PRINT#-2,TAB
(25)"SATISFACTORY"
1200 IF T=5 THEN PRINT#-2,TAB
(25)"CO-OPERATIVE"
1210 IF T=6 THEN PRINT#-2,TAB
(25)"HELPFULL"
1220 IF T=7 THEN PRINT#-2,TAB
(25)"DETERMINED"
1230 IF T=8 THEN PRINT#-2,TAB
(25)"FAIR"
1240 IF T=9 THEN PRINT#-2,TAB
(25)"INCONSISTENT"
1250 IF T=10 THEN PRINT#-2,TAB
(25)"POOR"
1260 IF T=11 THEN PRINT#-2,TAB
(25)"UNCO-OPERATIVE"
1270 IF T=12 THEN PRINT#-2,TAB
(25)"NO ASSESSMENT"
1280 IF T=13 THEN PRINT#-2,TAB
(26)"UN-SATISFACTORY"
1290 CLS
1300 PRINT#-2
1310 PRINT#-2
1320 PRINT#-2
1330 '-----
-----
1340 '                YEAR LEVEL
1350 '-----
-----
1360 LOCATE23,0:PRINT"YEAR
LEVEL DESCRIPTIVE STATEMENTS"
1370 LOCATE28,2:PRINT"LEVEL <1>
OR LEVEL <2>"
1380 LOCATE28,4:PRINT"CHOOSE
WHICH LEVEL";:INPUT LS
1390 CLS

```

```

1400 L=VAL(L$)
1410 IF L>2 THEN 1370
1420 IF L=1 GOTO 1470
1430 IF L=2 GOTO 1580
1440 '-----
-----
1450 '          LEARNING AREA
1460 '-----
-----
1470 LOCATE23,6:PRINT"WHICH
LEARNING AREA REQUIRED"
1480 LOCATE28,8:PRINT"CHOOSE
FROM"
1490 LOCATE28,10:PRINT"METALWO
RK...1"
1500 LOCATE28,11:PRINT"GRAPHIC
S....2"
1510 LOCATE28,13:PRINT"CHOOSE
No 1-2"
1520 LOCATE28,15:PRINT"REQUIRE
MENT No";:INPUT M$
1530 CLS
1540 M=VAL(M$)
1550 IF M>2 THEN 1510
1560 IF M=1 GOTO 1760
1570 IF M=2 GOTO 1870
1580 CLS
1590 LOCATE23,6:PRINT"WHAT
LEARNING AREA REQUIRED"
1600 LOCATE28,8:PRINT"CHOOSE
FROM"
1610 LOCATE28,10:PRINT"METALWO
RK....1"
1620 LOCATE28,11:PRINT"GRAPHIC
S.....2"
1630 LOCATE28,12:PRINT"PLASTIC
S.....3"
1640 LOCATE28,14:PRINT"CHOOSE
No 1-3"
1650 LOCATE26,16:PRINT"REQUIRE
MENT No";:INPUT N$
1660 N=VAL(N$)
1670 IF N>3 THEN 1640
1680 IF N=1 GOTO 1960
1690 IF N=2 GOTO 2110
1700 IF N=3 GOTO 2190
1710 '
1720 CLS
1730 '-----
-----
1740 '          DESCRIPTIVE
ASSESSMENT
1750 '-----
-----
1760 LOCATE1,4:PRINT"INSTRUCTI
ON HAS BEEN GIVEN IN THE
FOLLOWING :- WORKSHOP SAFETY,
MARKING OUT,  SOLDERING, USE
OF SIMPLE HAND TOOLS, CUTTING
AND FOLDING TECHNIQUES."
1770 LOCATE1,8:PRINT"MATERIALS

```

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USED :- ALUMINIUM SHEET, TIN
PLATE, GALVANISED SHEET AND
COPPER SHEET."
1780 PRINT#-2,TAB(3)"INSTRUCTI
ON HAS BEEN GIVEN IN THE
FOLLOWING :-"
1790 PRINT#-2,TAB(3)"WORKSHOP
SAFETY, MARKING OUT, SOLDERING,
USE"
1800 PRINT#-2,TAB(3)"OF SIMPLE
HAND TOOLS, CUTTING AND
FOLDING"
1810 PRINT#-
2,TAB(3)"TECHNIQUES."
1820 PRINT#-2
1830 PRINT#-2,TAB(3)"MATERIALS
USED :- ALUMINIUM SHEET, TIN
PLATE"
1840 PRINT#-2,TAB(3)"GALVANISED
SHEET AND COPPER SHEET."
1850 PRINT#-2
1860 GOTO 2350
1870 CLS
1880 LOCATE1,4:PRINT"INSTRUCTI
ON HAS BEEN GIVEN IN THE
FOLLOWING :- USE OF DRAWING
INSTRUMENTS, EXPLANATORY
DIAGRAMS, SYMBOLS, MAPPING,
STATISTICAL DIAGRAMS AND
REPRESENTATIONAL DRAWINGS."
1890 PRINT#-2,TAB(3)"INSTRUCTI
ON HAS BEEN GIVEN IN THE
FOLLOWING:-"
1900 PRINT#-2,TAB(3)"USE OF DR
AWING INSTRUMENTS, EXPLANATORY"
1910 PRINT#-2,TAB(3)"DIAGRAMS,
SYMBOLS, MAPPING, STATISTICAL"
1920 PRINT#-2,TAB(3)"AND REPRE
SENTATIONAL DRAWINGS."
1930 PRINT#-2
1940 CLS
1950 GOTO 2350
1960 LOCATE1,4:PRINT"INSTRUCTI
ON HAS BEEN GIVEN IN THE
FOLLOWING:- WORKSHOP SAFETY,
MARKING OUT, SOLDERING, USE OF
SIMPLE AND SMALL HAND TOOLS,
MACHINE TOOLS i.e. LATHE,
VERTICAL MILLING M/C, CUTTING
AND FOLDING TECHNIQUES, OXY-
ACET WELDING
1970 LOCATE1,9:PRINT"MATERIALS
USED:- ALUMINIUM SHEET, TIN
PLATE, GALVANISED SHEET, STEEL
BAR AND FLAT, AND ALUMINIUM
BAR."
1980 PRINT#-2,TAB(3)"INSTRUCTI
ON HAS BEEN GIVEN IN THE
FOLLOWING:-"
1990 PRINT#-2,TAB(3)"WORKSHOP
SAFETY, MARKING OUT,

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SOLDERING,"
2000 PRINT#-2,TAB(3)"USE OF SI
MPLE AND SMALL HAND TOOLS,
MACHINE"
2010 PRINT#-2,TAB(3)"TOOLS ie
LATHE, VERTICAL MILLING M/C,"
2020 PRINT#-2,TAB(3)"CUTTING
AND FOLDING TECHNIQUES AND OXY-
ACET"
2030 PRINT#-2,TAB(3)"WELDING
2040 PRINT#-2
2050 PRINT#-2,TAB(3)"MATERIALS
USED:-ALUMINIUM SHEET, TIN
PLATE,"
2060 PRINT#-2,TAB(3)"GALVANISED
SHEET, STEEL BAR AND FLAT AND"
2070 PRINT#-2,TAB(3)"ALUMINIUM
BAR."
2080 PRINT#-2
2090 CLS
2100 GOTO 2350
2110 CLS
2120 LOCATE1,4:PRINT"INSTRUCTI
ON WAS GIVEN IN THE FOLLOWING:-
LETTERING, ORTHOGRAPHIC,
OBLIQUE, ISOMETRIC, SOLID
GEOMETRY."
2130 PRINT#-2,TAB(3)"INSTRUCTI
ON WAS GIVEN IN THE FOLLOWING:-
2140 PRINT#-2,TAB(3)"LETTERING,
ORTHOGRAPHIC,OBLIQUE,ISOMETRIC"
2150 PRINT#-2,TAB(3)"SOLID
GEOMETRY"
2160 PRINT#-2
2170 CLS
2180 GOTO2350
2190 LOCATE1,4:PRINT"INSTRUCTI
ON WAS GIVEN IN THE FOLLOWING:-
WORKSHOP SAFETY, MARKING OUT,
USE OF SMALL HAND TOOLS, USE OF
MACHINE TOOLS i.e LATHE,
PEDESTAL DRILL."
2200 PRINT#-2
2210 LOCATE1,8:PRINT"THE TECHN
IQUES AND PROCESSES STUDIED,
COMPRISED OF THE FOLLOWING:-
THERMOFORMING, LAMINATING AND
INJECTION MOULDING."
2220 PRINT#-2,TAB(3)"INSTRUCTI
ON WAS GIVEN IN THE FOLLOWING:-
"
2230 PRINT#-2,TAB(3)"WORKSHOP
SAFETY, MARKING OUT, USE OF
SMALL"
2240 PRINT#-2,TAB(3)"HAND TOOL
S, USE OF MACHINE TOOLS ie
LATHE"
2250 PRINT#-2,TAB(3)"PEDESTAL
DRILL"
2260 PRINT#-2
2270 PRINT#-2,TAB(3)"TECHNIQUE

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S AND PROCESSES STUDIED IN
THIS"
2280 PRINT#-2,TAB(3)"AREA, COM
PRISED OF THE FOLLOWING:-"
2290 PRINT#-2,TAB(3)"THERMOFOR
MING, LAMINATING AND INJECTION"
2300 PRINT#-2,TAB(3)"MOULDING"
2310 PRINT#-2
2320 LOCATE1,11:PRINT"THE WORK
REQUIREMENTS WERE AS FOLLOWS:-
PRACTICAL WORK, WRITTEN WORK
AND ASSIGNMENTS."
2330 GOTO 2350
2340 '
2350 CLS
2360 LOCATE20,0:PRINT"WHICH
TYPE OF ASSESSMENT DO YOU
REQUIRE"
2370 LOCATE22,2:PRINT"DESCRIPT
IVE (A) OR OWN COMMENTS (B)"
2380 LOCATE24,4:PRINT"WHICH DO
YOU REQUIRE <A> OR <B>"
2390 LOCATE30,6:INPUT"IF <A> OR
<B>";Z$
2400 IF Z$="A" THEN 2410:ELSE
3640
2410 CLS
2420 '
2430 '
2440 '
2450 '
2460 '
2470 '-----
-----
2480 '          DESCRIPTIVE
COMMENT
2490 '-----
-----
2500 LOCATE25,0:PRINT"DESCRIP
TIVE ASSESSMENT"
2510 LOCATE30,1:PRINT"CHOOSE
FROM"
2520 LOCATE2,3:PRINT"YOUR EFF
ORTS IN THIS UNIT HAVE BEEN
EXCELLENT. YOU HAVE
CONCENTRATED WELL AND DEVELOPED
THE SKILLS AND TECHNIQUES
REQUIRED IN THIS AREA OF
STUDY.....0"
2530 LOCATE2,6 :PRINT"YOU HAVE
CONCENTRATED WELL IN THIS AREA
OF STUDY, GAINED A GOOD
UNDERSTANDING OF THE BASIC
SKILLS AND PROCESSES
REQUIRED.....1"
2540 LOCATE2,10:PRINT"YOU HAVE
DEVELOPED THE SKILLS AND
PROCESSES TO A SATISFACTORY
STANDARD.....2"
2550 LOCATE2,13:PRINT"SATISFAC

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TORY RESULT,BUT YOU NEEDED TO
BE MORE CAREFUL IN THE
FINISHING OF YOUR
WORK.....
.....3"
2560 LOCATE2,16:PRINT"YOU
HANDLED THE EQUIPMENT IN A
COMPETENT MANNER,BUT YOU NEEDED
TO BE MORE CAREFUL IN FINISHING
YOUR
PROJECTS.....
.....4"
2570 LOCATE17,19:PRINT"DO YOU
WANT TO SEE MORE DESCRIPTIVE
ASSESSMENTS "
2580 LOCATE32,21:INPUT"IF <Y>ES
OR <N>O"; DA$
2590 IF DA$="Y" THEN 2740 ELSE
2600
2600 LOCATE22,22:PRINT"WHICH
COMMENT DO YOU REQUIRE 0-4"
2610 LOCATE22,23:PRINT"COMMENT
No";:INPUT C$
2620 C=VAL(C$)
2630 IF C>4 THEN 2610
2640 IF C=0 GOTO 2940
2650 IF C=1 GOTO 2990
2660 IF C=2 GOTO 3030
2670 IF C=3 GOTO 3060
2680 IF C=4 GOTO 3090
2690 CLS
2700 '
2710 '
2720 '
2730 '
2740 LOCATE2,3:PRINT"THE SKILLS
YOU DEVELOPED WERE USED
EFFECTIVELY,BUT THE FINISH OF
YOUR PROJECTS NEEDED MORE
ATTENTION.....
.....1"
2750 LOCATE2,6:PRINT"THE UN-
SATISFACTORY RESULT IS DUE TO A
LACK OF CONCENTRATION AND
INVOLVEMENT IN CLASS WHICH WAS
GENERATED FROM YOUR DISRUPTIVE
BEHAVIUOR.....2"

2760 LOCATE2,10:PRINT"THE UN-
SATISFACTORY RESULT IS DUE FROM
A LACK OF INVOLVEMENT AND
CONCENTRATION IN THIS AREA OF
STUDY.....
.....3"
2770 LOCATE2,14:PRINT"YOUR UN-
STAISFACTORY RESULT WAS DUE TO
A LACK OF
ATTENDANCE.....4"
2780 LOCATE2,16:PRINT"NO

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ASSESSMENT DUE TO THE SHORT
ENROLLMENT IN THIS AREA OF
STUDY.....5"
2790 PRINT'
2800 PRINT'
2810 PRINT'
2820 PRINT'
2830 PRINT'
2840 LOCATE20,22:PRINT"WHICH
COMMENT DO YOU REQUIRE 1-5"
2850 LOCATE33,23:PRINT"COMMENT
No";:INPUT C$
2860 C=VAL(C$)
2870 IF C>5 THEN 2840
2880 IF C=1 GOTO 3130
2890 IF C=2 GOTO 3170
2900 IF C=3 GOTO 3210
2910 IF C=4 GOTO 3250
2920 IF C=5 GOTO 3280
2930 CLS
2940 PRINT#-2,TAB(3)"YOUR
EFFORT IN THIS UNIT HAS BEEN
EXCELLENT."
2950 PRINT#-2,TAB(3)"YOU HAVE
CONCENTRATED WELL AND DEVELOPED
THE"
2960 PRINT#-2,TAB(3)"SKILLS AND
TECHNIQUES REQUIRED IN THIS
AREA"
2970 PRINT#-2,TAB(3)"OF STUDY"
2980 GOTO 3320
2990 PRINT#-2,TAB(3)"YOU HAVE
CONCENTRATED WELL IN THIS AREA
OF "
3000 PRINT#-
2,TAB(3)"STUDY,GAINED A GOOD
UNDERSTANDING OF THE"
3010 PRINT#-2,TAB(3)"BASIC
SKILLS,PROCESSES AND TECHNIQUES
REQUIRED"
3020 GOTO 3320
3030 PRINT#-2,TAB(3)"YOU HAVE
DEVELOPED THE BASIC SKILLS AND"
3040 PRINT#-2,TAB(3)"PROCESSES
TO A SATISFACTORY STANDARD."
3050 GOTO 3320
3060 PRINT#-
2,TAB(3)"SATISFACTORY
RESULT,BUT YOU NEEDED TO BE
MORE"
3070 PRINT#-2,TAB(3)"CAREFUL IN
THE FINISHING OF YOUR
PROJECTS."
3080 GOTO 3320
3090 PRINT#-2,TAB(3)"YOU
HANDLED THE EQUIPMENT IN A
COMPETENT"
3100 PRINT#-2,TAB(3)"MANNER,BUT
YOU NEEDED TO BE MORE CAREFUL
IN"
3110 PRINT#-2,TAB(3)"FINISHING

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YOUR PROJECTS."
3120 GOTO 3320
3130 PRINT#-2,TAB(3)"THE SKILLS
YOU DEVELOPED WERE USED
EFFECTIVELY"
3140 PRINT#-2,TAB(3)"BUT THE
FINISH OF YOUR PROJECTS NEEDED
MORE"
3150 PRINT#-2,TAB(3)"ATTENTION"
3160 GOTO 3320
3170 PRINT#-2,TAB(3)"THE UN-
SATISFACTORY RESULT WAS DUE TO
A LACK OF"
3180 PRINT#-
2,TAB(3)"CONCENTRATION AND
INVOLVEMENT IN CLASS,WHICH WAS"
3190 PRINT#-2,TAB(3)"GENERATED
FROM YOUR DISRUPTIVE
BEHAVIOUR."
3200 GOTO 3320
3210 PRINT#-2,TAB(3)"THE UN-
SATISFACTORY RESULT WAS DUE
FROM A LACK"
3220 PRINT#-2,TAB(3)"OF
INVOLVEMENT AND CONCENTRATION
IN THIS AREA"
3230 PRINT#-2,TAB(3)"OF STUDY"
3240 GOTO 3320
3250 PRINT#-2,TAB(3)"YOUR UN-
SATISFACTORY RESULT WAS DUE TO
A LACK"
3260 PRINT#-2,TAB(3)"OF
ATTENDANCE."
3270 GOTO 3320
3280 PRINT#-2,TAB(3)"NO
ASSESSMENT DUE TO THE SHORT
ENROLLMENT IN "
3290 PRINT#-2,TAB(3)"THIS AREA
OF STUDY."
3300 GOTO 3320
3310 CLS
3320 PRINT#-2
3330 PRINT#-2
3340 PRINT#-2
3350 PRINT#-2
3360 PRINT#-2
3370 PRINT#-2
3380 PRINT#-2
3390 PRINT#-2
3400 PRINT#-2
3410 PRINT#-2
3420 PRINT#-2
3430 PRINT#-2
3440 PRINT#-2
3450 PRINT#-2
3460 PRINT#-2
3470 PRINT#-2
3480 PRINT#-2
3490 PRINT#-2
3500 PRINT#-2
3510 PRINT#-2

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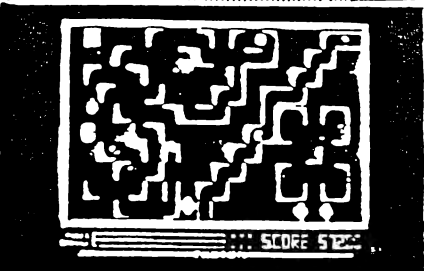
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3520 PRINT#-2
3530 PRINT#-2
3540 PRINT#-2
3550 PRINT#-2
3560 PRINT#-2
3570 PRINT#-2
3580 CLS
3590 LOCATE30,0:PRINT"DO YOU
WANT TO QUIT"
3600 LOCATE30,2:INPUT"IF <Y>ES
OR <N>O";Q$
3610 IF Q$="Y"THEN 3630:ELSE
3620
3620 CLS:GOTO 100
3630 POKE113,0:EXEC40999
3640 CLS
3650 '-----
-----
3660 ' OWN COMMENTS
3670 '-----
-----
3680 LOCATE10,0:PRINT"TYPE
COMMENT"
3690 LOCATE10,4:PRINT" FIRST
LINE"
3700 LOCATE10,5:INPUT A$
3710 LOCATE10,6:PRINT"SECOND
LINE"
3720 LOCATE10,7:INPUT B$
3730 LOCATE10,8:PRINT"THIRD
LINE"
3740 LOCATE10,9:INPUT C$
3750 LOCATE10,10:PRINT"FOURTH
LINE"
3760 LOCATE10,11:INPUT D$
3770 LOCATE10,12:PRINT"FIFTH
LINE"
3780 LOCATE10,13:INPUT E$
3790 LOCATE10,15:PRINT"IS THIS
COMMENT CORRECT"
3800 LOCATE10,17:INPUT"IF (Y)ES
OR (N)O";W$
3810 LOCATE10,19:IF W$="Y" THEN
3820 :ELSE 3680
3820 CLS:GOTO 3830
3830 PRINT#-2,TAB(3)A$
3840 PRINT#-2,TAB(3)B$
3850 PRINT#-2,TAB(3)C$
3860 PRINT#-2,TAB(3)D$
3870 PRINT#-2,TAB(3)E$
3880 CLS:GOTO 3300

```

SUNDOG SYSTEMS

NEW! PHOTON



Energy is everything: your home world depends on it. However, someone or something is slowly siphoning it away. As your world's champion, you must climb into the experimental Power Tank to challenge this nemesis and his minions. Your key lies with the ability to teleport solid mass. Use this to manipulate and explore the endless stronghold of the enemy, and to exploit the free-floating DUPES (Dense Units of Photon Energy) to destroy the menacing Plasma Droids. Be cautious, though: those DUPES can be deadly, too! Photon, a fantastic new arcade game for your CoCo3, contains spectacular 320x200 resolution, 16 color graphics, ultra-smooth 60 Hz animation, and loads of real-time music and sound effects. It will bend your mind racing over endless possibilities, requiring quick decisions and reactions. Quite simply, Photon is incredibly addictive. It will deliver hours of excitement. Will you become your world's greatest hero, or just another energy slave? Req. 128K CoCo 3 and disk drive.

\$50-00

NEW! GRAFEXPRESS 2.0 EXPRESS

GrafExpress 2.0 is a complete graphics and music programming environment. From the beginner to the accomplished professional, you can use GrafExpress to create lightning fast arcade games, graphic applications and utilities, and windowing multimedia demonstrations! The GrafExpress package includes two incredible systems. GrafExpress 1E works on all monitor types and offers support in 12 graphic resolutions (from 128x192 to 320x225), GrafExpress 256 offers 6 resolutions (from 128x192 to 160x225) on a composite monitor in an astounding 256 colors! Ever see a CoCo do that before? Both systems include standard graphics commands (CIRCLE, FILL, etc.) that blow away the competition. For example, the BOX command peaks out at over 2 MegaPixels/second, that's 300 times faster than BASIC! 255 separate sprites of up to 100x100 pixels each are supported with window clipping and high-res pixel level collision checking. The 8-octave/4-voice music synthesizer has independent envelope, waveform, and volume controls, a 7+ KHz sampling rate, and much more. Other features include text/graphics mixing, different font sizes, fast window copying and scrolling, picture save/load, easy implementation from both BASIC and assembly language, multiple screen animation, and support for 128K/512K, double speed, and the high-res joystick interface. The package also contains support programs that are worth the purchase price of GrafExpress alone! These include an introductory demo, a picture editor, a waveform editor, and an art program that supports 256 colors! GrafExpress also comes with a 50 page manual that fully explains all of its incredible features. If you do any graphics programming or simply want to see what your little CoCo is capable of, GrafExpress is a must! Req. 128K CoCo 3 and disk drive.

\$50-00

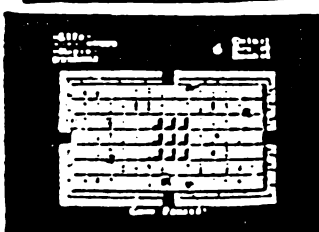
NEW! War Monger



The world is in unrest. Power-hungry villains and evil warlords are readying their forces. It falls to you to lead your people against these armies, and only your best strategic plans can save the day. Fight the good fight in any era or locale. Play a simple game of capture the flag armed with water balloons, or climb into the cockpit of a 100 foot high armored warrior. Explore the deepest dungeons, defend your galaxy, or create your own scenarios with this incredible war game construction set/simulator. Your imagination is your only limit. You will deploy your forces with total control over hostile terrain while you scroll a graphic bird's-eye window over an immense world. War Monger has terrific 320x200 resolution, 16 color graphics and includes a file editor to create or edit your own. Play against the computer, battle with another player, or simply watch the computer plot against itself. The enemy is everywhere. Are you ready to take on the challenge as the War Monger? Req. 128K CoCo 3 and disk drive.

\$50-00

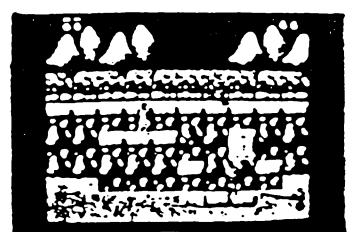
The Quest for THELDA



An immensely popular 128K CoCo 3 arcade/adventure. Over 500 screens of fast fantasy action and puzzle solving. Great graphics and sound effects.

\$50-00

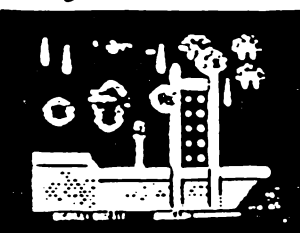
THE CONTRAS



A 512K two player futuristic combat arcade game. Full screen 320x225 hardware scrolling and smooth animation. Back-ground music score and sound effects! 512K CoCo3 only.

Shipping soon! \$50-00

Cosmos City



This was THE game of '81! Ultra-fast space action with hardware scrolling on a 128K CoCo 3. Wild sound effects and over 30 MegaBytes of amazing graphics!

\$50-00

ZENIX



Lightning fast arcade game for the 128K CoCo 3. Terrific 320x225 graphics, back-ground music score and sound effects, and out-of-sight game play.

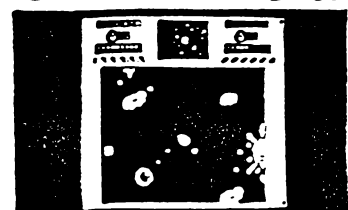
\$45-00

ALSO AVAILABLE

Warrior King CoCo 3	\$45-
In Quest of the Star Lord CoCo 3	\$50-
Mini Sheet	
Mail of the King 1, 2 or 3- CoCo 1-3	\$50- each
Mail of the King Trilogy	\$100
White Fire of Eternity CoCo 1-3	\$40-
Dragon Blade CoCo 1-3	\$40-
Champion CoCo 1-3	\$40-
Paladin's Legacy CoCo 1-3	\$40-

Please add \$5 for postage.

Sinistarr



Everyone loves this 512K arcade game. 3 disks packed with spectacular graphics and eerie background digital sound effects. 512K CoCo 3 on 5.

\$50-00

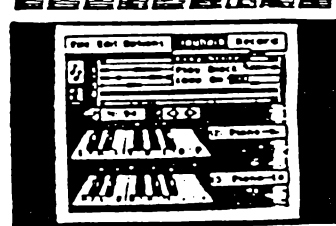
KUUM-SAI TO BE NINJA



The best selling 128K CoCo 3 martial arts arcade game. Now available in both RS-DOS and OS-9 versions. Play the incredible combat experience you've been missing under the operating system of your choice!

\$45-00

Sample Instrument Disks



A polyphonic digital sound sequencing system for your 128K/512K CoCo 3 with a user-friendly point-and-click graphic editor. Create music scores with your own sounds or from the many we provide.

Sample instrument disks. 6 sides of sampled sounds/instruments. \$50-00



SUNDOG SYSTEMS

P.O. Box 766 Manassas, VA 22111 703/330-8989

The above software is available in Australia through REMCOMS

BEGINNING WITH OS-9

Before we plunge head first into our CoCos, allow me to drag out my soapbox for just a minute. Many users of OS-9 will say, in all seriousness, that you MUST install this or that patch or do some hardware modification to your CoCo before 'really' using OS-9. These same people will inform you, in the same serious tones, that most of the utilities on your Tandy disks are absolute garbage and must be immediately replaced.

HOGWASH! It is true that after installing the 30 odd patches available for Level 2, it is a much more capable system than the stock- in the same fashion that a bored and blueprinted 350 Chevy with twin carbs and a hot cam is more capable than Mum's Caprice Classic. And while the 'six way power seat' commercial utility programmes are nice, there is certainly nothing wrong with pulling the lever and scooting forward. We will be getting into all of that here, but for now let's just get the Caprice to the handy mart! I know EZGEN will make a bootfile a tad faster and you really have to strap the MPI to run 3 serial ports!!! That's it for the sermon. On to business.

Tandy, in their infinite wisdom, decided to ship OS-9 set up in it's least capable configuration. A single 32 column all cap screen and 35 track single sided drives greet the new user with open arms! The joy he feels when first viewing this screen is hard to imagine. There is a good side to this, however. It has to be changed right away so that we can explore the possibilities.

Most operating systems are a single programme, designed to run one single computer one single way. DECB runs a CoCo this way and MSDOS runs an IBM

or clone this way, if you don't like it, tough. Buy a programme that includes it's own substitute for the resident DOS if you can afford it. But OS-9 isn't a monolithic whole- it's a collection of pieces. Technically, there is no single programme 'CoCo OS-9. Tandy (and other makers of OS-9 machines) took the generic 'OS-9 collection', added some CoCo specific modules, and wrote a manual. Viola! CoCo OS-9!

There are some big advantages to this system. First, you can make as big or as small an Operating System as you need. A 128K single floppy machine can't afford to have big chunks of hard drive code sitting uselessly in RAM, while the power user might not be able to live without his serial mouse or other special purpose driver. When a 'hacker' wants to improve some aspect of the system, he only has to deal with one small module, not hundreds of kilobytes of code. And last, who cares what the maker THOUGHT they were selling- make what you want out of it.

The MODULES directory on the BASIC09/Config disk includes a pretty good selection of OS-9 modules. Each file there has an extension which gives you some clue as to what it is. Tandy also supplied a bootlist. This is just a list of the modules you want in your system.

It helps to think of the bootlist as an outline. The stock Tandy bootlist reads:

```
OS9P2
Init
IOMan
RBF.mm      (Random Block File
manager, can handle any disk
drive style file system)
CC3Disk.dr  (drives common coco
floppy drive systems)
D0_35s.dd   (35 track single
sided drive)
```

D1_35s.dd (35 track single sided drive)
 Dd0_35s.dd (default drive, 35 track single sided drive d0)
 SCF.mn (Sequential Character File manager does the one character at a time things)
 CC3IO.dr (CoCo 'console' driver handles the vdgint.io, keyboard, and video, using these)
 VDGInt.io
 GrfInt.io (two IO files)
 Term_vdg.dt (the 'main' screen - a 32x16 VDG!)
 Term_win.dt (40/80 column window screen)
 W.dw (Generic window uses next available numbered window. Or call by number.)
 W1.dw (Each window HAS to have a number!)
 ACIAPak.dr (hardware serial port driver)
 T2.dd (describes Tandy RS232 pak/clone)
 PRINTER.dr (bit-banger printer driver)
 P.dd (bit-banger printer descriptor)
 PipeMan.mn (manages communication between process)
 Piper.dr (driver for coco hardware)
 Pipe.dd (and descriptor)
 Clock.60Hz (can't timeslice without a clock!)
 CC2Go ('launches' OS9 on coco3)

Using the stock bootlist as an outline, and our notes, we can pick apart the stock list, and make up our own personal wish list. All it takes is a text editor! Lets run through the stock list section by section:

KERNAL: There are 3 modules added automatically to your boot (REL,Boot,Os9P1... won't be in the bootlist) which form the heart of a basic OS-9 system. The two modules at the start of bootlist are extension of this basic set and should always be included. These five modules are collectively known

as the kernal. This inner core only needs 2 external modules to form a 'real' OS-9 system. IOMan provides the path from here to any of the managers listed below, while clock is needed to time the multitasking. Now we get to the options.

RBF: Almost a no-brainer. Anything that even resembles a disk drives goes through this manager, including floppies, hard drives, and ram disks. Under RBF the most common entry would be the CC3Disk driver and the floppy descriptors it needs to run your floppy drives - which are probably better than the 35 single 'standard'. Replace the stock descriptors with ones that reflect your floppies (an FD502 is really a 40trk, double sided drive; FD501 single 40 track). Hard disk owners will add the hard disk driver and descriptor set right after the floppy stuff. RAMdisks fit under this heading also - so the ramdisk driver and descriptor should be placed in this block of the bootlist. There is a special descriptor for RBF - the DD or default drive is simply a copy of one of the other RBF device descriptors, renamed as /dd. /dd insulates your system from your programmes... the programme doesn't have to know if you run floppies, a hard disk, ramdisk, or something that hasn't been invented yet... it's special files will be on /dd!

SCF: This is the hardest working manager on your coco! The first thing it is responsible for is the console (keyboard/video). Here you have 3 levels to choose from. VdgInt is a very CoCo specific sort of console driver. It's fast - which is why most Tandy games use it. But it's not terribly capable, so most

programmes that don't come from Tandy use one of the others. It does have the advantage that it will live peaceably with either one of the other console drivers, but unless you plan to run lots of Tandy games from you stock boot, remove it. The second console driver is GrfInt.io. This is the windowing OS-9 console most programmes expect. In theory, it sacrifices some speed for function. In practice, you have to have at least GrfInt.io to do much. At the last console choice is only available to folks who have the MultiVue package. WindInt adds some extra features to GrfInt - many of the fancy menus and bordered windows in MultiVue are built into WindInt! In fact, many programmes that 'require' MultiVue really only require WindInt. The descriptor Term_vdg is the 32x16 CoCo1 text screen. Immediately replace it with Term_win.dt, which can easily be modified to become an 80 column screen. 128K users may find this is the only 80 column window they can 'afford'. The rest of the descriptors (the w#.dw series) should all be included. They don't take up much room, and you will need a numbered descriptor for each window you (or a programme) opens.

Next thing up is the communications ports. If you have an RS232 Pak, the official driver is ACIAPak. There are 2 descriptors -/t2 for the 232Pak, and /m1 for a modempak or RS-232 modified to use the modempak address. The second choice sort of made sense years ago - SIO and /t1 can do 300 baud through the bitbanger port. Totally useless today! Remove them from bootlist so they can rest in peace. Printer and /p use the bitbanger as a serial printer

port. Not much to say about that - if that's where the printer cable ends up, you need this pair!

PIPEMAN: One of the main things OS-9 adds is the ability to have all this independent stuff running at the same time. Which brings up the musical question, what if I have to connect 2 of these programmes together? This is the set. Even if you haven't used this group yet, keep it around. To make up a new boot, you first draw up a new outline similar to the one above. Most changes are made from right to left - first looking at the descriptors, then the drivers, then perhaps the managers. If a new descriptor will do, just replace the old one with the new.

When removing modules, first pull out the unneeded descriptors, then any drivers that no longer have anything to drive. So if the 300bps bitbangers driver /t1 goes, its driver SIO can go, since there is nothing left in it's section of the outline. When adding new system software, work from left to right. Figure out which manager is responsible, then add the new driver and descriptor(s) in that manager's section. In general, anything that looks like a disk drive (hard disk, ramdisk, etc.) is RBF. Tapes, terminals, and modems are SCF.

There are certain limitations on how a bootlist can be set up, and these are the main guidelines: The entire OS-9 system has to fit in a single 64K 'process space'. This size is dictated by the address range of the 6809 itself - switching GIME registers while 'inside' the operating system is not allowed! Certain utilities use this 'systemram'

for data, most notably format, which uses a whopping 6K!. When you get an error 237 (System RAM full) the amount of stuff in your bootlist, plus any data space system utilities are using has gone over this limit. The only solution is to remove some stuff from boot. A few likely suspects were mentioned above (SIO, /tl, vdgint) and there is a third. CC3Go has no reason to be in os9 boot. It's only used once, when the CoCo starts up, then it's stuck - when mushed into the boot, there's no way to get rid of it! Put CC3Go in the root (main) directory of your boot disk, and delete it from bootlist. OS-9 will find it, use it, and delete it from RAM when done.

The second consideration is squashing a collection of problems known as the BLOB, or Boot List Order Bug. The symptom is a boot that just won't, even though it looks perfect. There are a lot of theories and fixes for the BLOB, ranging from total voodoo to some well thought out cures. The thing to remember is the BLOB is a whole collection of problems, so there is no 'One True Fix'. Position is critical. The GIME splits a CoCo's RAM into 8K blocks. Managers like to find the drivers and descriptors they manage in the same 8K block of RAM as they occupy. By keeping the outline format above, there is a better chance that each subsection will end up in the same block. Sometimes a section will start too close to the end of a block anyway, and will 'run over' into the next one. If an otherwise good looking boot just will not work, stir! There are 2 modules that don't really belong anywhere - try moving Init or Clock to the other end of the list. Another

possibility is changing the order of the three main sections RBF, SCF, and PIPEMAN. One fact to remember is, once another boot is made up, all bets are off! Don't automatically include this or that 'fix' just because it was needed last time - not only may it not be needed, but may cause the problem. After a few years you end up with a fix to fix the fix that fixed the original problem, which might have disappeared by itself on the new boot!

Now to actually make a boot disk. If you are like me, the first thing you did was read the Getting Started section of the manual, which says use Config to make new boot disks. I did, and frankly Config is a terrible programme. The intention is good, but there are just too many limitations. Instead, use that most cryptic pair of OS-9 utilities - OS9gen and Dsave. **WAIT!! COME BACK!** Neither is as hard to use as the manual leads one to believe. OS9gen only wants one thing - the bootlist we have been talking about. Chd to the modules directory on a copy of your B09 disk. Copy the stocklist to another file, using a name that will mean something six months from now! It's a pain to wade through a dozen files with names like boot2.1a, looking for the one that supports double sided floppies, speech pak, and Tandy game gfx. Much better to put up with the extra typing now and call MbootVDGdsSSP. Using any word processor or text editor (OS-9 has Edit with it), edit this copy to reflect what you want in the new boot. Double check the final version against the description above, just to make sure everything is in there, and in the right place. MultiVue owners should replace GrfInt with WindInt,

and add the extra window descriptors w8 through 215 (remember to copy the modules themselves from the MVue modules dir to this one). With the new bootlist made up, put the B09 disk in drive /d1, and a freshly formatted disk in /d0; chd to /d1/modules, and then type
 os9gen/d0<newbootlist. This will put exactly one file on the new boot disk os9boot. To get the rest of the System Master on it, put the Tandy System Master disk in /d1, chd /d1;chx /d1/cmds, then dsave /d1 /d0!shell.

Single drive users have a problem here. Dsave can't do single drive backups. There is a way, as long as the new boot is smaller than the original. If you have removed the three modules we spoke of earlier, this will probably work. Start with a backup of your old System Master. Delete OS9boot. Insert the b09 disk, chx /d0/cmds;chd /d0/modules, then os9gen /d0 -s<new bootlist. In either case, if you have removed cc3go from the bootlist, make sure to copy it from the modules directory to the root directory of the new Master. Otherwise your CC3 won't go!

Next time: What Tandy didn't sell you. I'll also answer any questions received about starting OS-9 I can be contacted through the magazine, Delphi(RICKULAND), Internet(rickuland.delphi.com), or good old U.S Mail (Rick Ulland, 449 S.90th Street, West Allis, WI 53214). Remember... the only stupid question is the one you didn't ask (I won't print your name if requested....)! If I didn't explain something fully enough, and you can't seem to figure it out, write! That's what this column is all about... teaching you how to

get started with OS-9.



(Rick Ulland is the owner of CoNect. He is an avid OS-9 user and hardware builder. He currently uses a CoCo 3 system.)

"The preceding article was extracted from 'The world of 68 micros' Aug 93 and is reprinted by permission".

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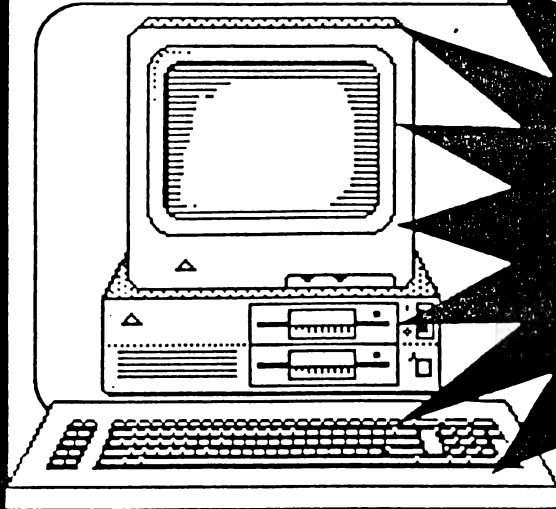
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COCO FRIENDS DISK MAGAZINE

"The most exciting new product for the CoCo Since....?"



COCO FRIENDS DISK MAGAZINE (CFDM) is devoted exclusively to those who still enjoy running under RS Dos. The standard system needed to use CFDM is CoCo 3, RGB monitor, at least one disk drive, and the RS Dos which came with your CoCo 3.

CFDM is a monthly disk based publication which is produced on a "flippie" disk. When you "Run" the "magazine" side of CFDM, you'll be greeted with a beautiful cover picture by CoCo Friend James Gibbons. Pressing any key takes you to the magazine's colorful Main Menu. There you'll find 14 sections which are filled with entries. Sections Included are: About CFDM; About this Issue; Active CoCo; Advertisements; CoCo Friends Art Gallery; Articles of the Month; Family Tree; Forum; From the Editor; Letters to the Editor; Potpourri; Programs of the Month; Reviews; and Question & Answers.

Next you will enter a Section and find a number of entries written by our CoCo Friends from all over the world. Each issue of CFDM contains from 60 to 80 entries. Some sections contain documentation about the many programs and graphics found on the "flip-side" of CFDM.

The "flip-side" or "program" side of CFDM is filled with contributions of wonderful programs and graphics from our many CoCo Friends! Each Issue has from 2 to 4 hi-res pics and from 8 to 15 never-before-seen programs.

**8 to 15
never-before-seen
programs**

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SPEEDWAY

BY

D. RAE

The following program is for use by folks associated with Compact Speedcars in Speedway racing. All instructions are included in the program. If you delete all the REM statements, it will work on the IBM.

This program is VERY roughly written, and Im sure most programmers will shudder when they see how badly written the code is, but it goes and thats all the counts.

This program has some calculations that are set up for a Quarter Mile track length (about 410 meters) as that is what our track is.

Also, one final note. If you do not understand this program ... then obviously you do not need it!!

0 'THIS PROGRAM WAS ORIGINALLY WRITTEN ON AN IBM USING GWBASIC. THE PROGRAM WAS CONCEIVED AND WRITTEN BY JACK AND DESMOND RAE. COCO 3 CONVERSION BY DESMOND RAE
1 'HOPEFULLY SOMEBODY MIGHT GET THE SAME AMOUNT OF USE OUT OF IT AS WE DO! IT IS VERY HANDY WITH MY BROTHER, JOHN, AND HIS COMPACT.

2 WIDTH80:PALETTE0,0:PALETTE8,66
10 REM TL=TRACK LENGTH IN KM
20 'COLOR 0,11:CLS
30 PI=3.14159:RX=1000:TL=.402336
35 CLS

40 PRINT:PRINT"

***** SPEEDWAY DATA FUNCTIONS MENU.*****"

50 PRINT 1,"COMPARE DIFF RATIO AND TYRE SIZE FOR PERFORMANCE"
60 PRINT 2,"FIND AVERAGE SPEED FROM KNOWN LAPTIME"
70 PRINT 3,"FIND HEIGHT OF TYRES IN CM FROM CIRC IN INCHES"
80 PRINT 4,"FIND LAPTIME FROM KNOWN SPEED IN KPH"
90 PRINT 5,"CONVERT CHAIN DRIVE SPROCKETS TO DIFF RATIO "
100 PRINT 6,"FIND OUT CAPACITY OF 4 CYL MOTOR IN CC'S"
110 PRINT 7,"SPARE 7"
120 PRINT 8,"SPARE 8"
130 PRINT 9,"RETURN TO DOS"
140 PRINT:PRINT:INPUT"FUNCTION"
;FU
150 IF (FU<1)OR(FU>9) THEN PRINT"TRY AGAIN.1 TO 9":GOTO 40

160 ON FU GOSUB 180,360,430,510,570,650,10,10,740
170 GOTO 20
180 'COLOR 14,1:CLS
190 PRINT:INPUT" ENTER THE MAXIMUM ENGINE RPM'S ";MR
200 PRINT:INPUT"ENTER THE MAXIMUM TORQUE RPM'S ";RT
210 PRINT:INPUT"ENTER THE GEAR RATIO [IE. 2.85] ";G
220 PRINT:INPUT"ENTER THE RATIO OF THE DIFF. [IE 6.926] ";D
230 PRINT:INPUT"ENTER THE OUTSIDE DIAMATER OF THE TYRES IN CENTIMETERS ";T
240 RW=(RX/G)/D:SP=RW*(PI*(T/100)):SP=(SP*60)/RX:
ST=SP*(RT/RX):SL=SP/10:
MT=(MR*.25):MX=(MR-MT)/RX:
SM=SP*(MR/RX)
250 MS=SP*MX:SP=INT(SP*10+.5)/10:
SL=INT(SL*100+.5)/100:
MS=INT(MS*10+.5)/10
260 IF ST < 0 THEN ST=0
270 CLS:PRINT:PRINT"YOUR SPEED PER 1000 RPM'S IN THIS GEAR IS";SP;"KMS/HR"
280 PRINT:PRINT"YOUR SPEED PER 100 RPM'S IN THIS GEAR IS";SL;"KMS/HR"
290 PRINT:PRINT"YOUR MAXIMUM TORQUE SPEED AT ";RT;"RPM'S IN THIS GEAR IS ";ST;"KMS/HR"
300 PRINT:PRINT"YOUR MAXIMUM STRAIGHT LINE SPEED AT";MR;"RPM IN THIS GEAR IS";SM;"KMS/HR"
310 PRINT:PRINT"THE AVERAGE MAXIMUM SPEED ALLOWING FOR 25 % TRACK LOSS IS";MS;"KMS/HR"
320 LT=(TL/MS*3600)
330 PRINT:PRINT"YOUR APPROX LAP TIME IS";LT;"SEC"
340 PRINT:INPUT"PRESS '0' KEY TO QUIT OR '1' KEY TO DO IT AGAIN .";MM
350 ON MM GOTO 180:RETURN
360 REM SPEED FROM LAP TIME
370 'COLOR 0,7:CLS
380 PRINT:INPUT"ENTER LAPTIME TO FIND OUT AVERAGE SPEED";WT
390 WS=TL*3600/WT
400 PRINT:PRINT"THE AVERAGE SPEED FOR"WT"SECS. IS"WS"KMS/HR"
410 PRINT:INPUT "PRESS '0' KEY TO QUIT OR '1' KEY FOR MORE ";MM
420 ON MM GOTO 370:RETURN
430 REM HEIGHT IN CM FROM CIRC IN INCHES
440 'COLOR 1,7:CLS
450 PRINT:INPUT"TO FIND OUT HEIGHT OF TYRES IN CM ENTER CIRC

```

IN INCHES";CT
460 DT=(CT/PI)*2.54
470 PRINT:PRINT"THE TYRE HEIGHT
IS"DT"CM"
480 PRINT:INPUT"PRESS '0' KEY TO
QUIT OR '1' KEY TO DO IT AGAIN
.";MM
490 ON MM GOTO 430:RETURN
500 REM FIND LAP TIME FROM KNOWN
SPEED
510 'COLOR 1,11:CLS
520 PRINT:INPUT"ENTER KNOWN
SPEED IN KPH";MT
530 KT=(TL*3600)/MT
540 PRINT:PRINT"A SPEED
OF"MT"KPH WOULD GIVE YOU A LAP
TIME OF"KT"SECS"
550 PRINT:INPUT"PRESS '0'KEY TO
QUIT OR '1'KEY TO DO IT
AGAIN";MM
560 ON MM GOTO 510:RETURN
570 REM CONVERT CHAIN DRIVE
SPROKETS TO DIFF RATIO
580 'COLOR 14,0:CLS
590 PRINT:INPUT"ENTER THE NUMBER
OF TEETH ON THE SMALL
SPROKET";SS
600 PRINT:INPUT"ENTER THE NUMBER
OF TEETH ON THE LARGE
SPROKET";LS
610 DR=LS/SS
620 PRINT:PRINT"THE DIFF RATIO
IS "DR"TO 1"
630 PRINT:INPUT"PRESS '0' KEY TO
QUIT OR '1'KEY TO DO IT
AGAIN";MM
640 ON MM GOTO 570:RETURN
650 REM FIND OUT CC OF 4 CYL
MOTOR
660 'COLOR 15,1:CLS
670 PRINT"THIS WILL ONLY WORK
FOR A 4 CYL MOTOR"
680 PRINT:INPUT"ENTER BORE SIZE
IN MM.";BS
690 PRINT:INPUT"ENTER STROKE
SIZE IN MM.";SZ
700 CC=(BS*BS*SZ*PI)/RX
710 PRINT:PRINT"THE SIZE OF THIS
4 CYL MOTOR IS "CC"CC."
720 PRINT:INPUT"PRESS '0' KEY TO
QUIT OR '1' KEY TO DO IT
AGAIN";MM
730 ON MM GOTO 650:RETURN
740 'SYSTEM
750 END

```

What do you send to CoCo-Link and how?

Well anything to do with the CoCo or of interest to CoCo users is what we are after, from programs to articles to reviews on your favourite game, word processor or utility. How do you send it, well there are a number of ways.

1. Send it on disk with at least two saves and one of these being in ASCII format. Ensure that you also send a text file using any word processor giving some information about your program etc. If you do not have a word processor then a neatly hand written letter will do, but remember I am not a chemist so it must be legible.

2. Send it using the same system as for a disk but on a tape.

Some of the wordprocessors I have available to me include;
 Window Writer (OS9),
 Simply Better,
 VIP Writer,
 Word Power 3.3
 Max 10,
 Desk Mate 3, and
 Home Publisher.

If you are sending a program please ensure that you have tested it to make sure it works, I simply do not have time to debug your program. If you do NOT wish to have your creation submitted to the Public Domain Library then please let me know, otherwise I will send it on to Robbie for perusal.

ABOVE ALL REMEMBER that without your submissions, this magazine will fold, so help me to help you and send in your creations so that COCO LIVES!

SECRETS OF THE COCO BY V. STEPHEN

What do you know of the secret side of the CoCo?

All those details that Tandy did not bother to put in their manuals. Things like Peeks, Pokes and Executes!

We all know the speed up poke (Poke 65497,0), triple speed which works on the CoCo3 only, but not the CoCo2. The CoCo2 loses the screen with it. Replace the 7 with a 5 and you get double speed on both machines.

The other Poke that we all know is the 'Reverse' Poke, which gives green letters on an almost black screen, (Poke &H95C9, &H39:Poke &HFF22, &H34).

Every now and again we feel like a blue or red screen and use CLS3 or CLS4 and we type words and we get them on a green backing in the middle of the blue or red screen. Irritating - very!! But, there are more and more POKES available! We can now write any coloured lettering on any coloured screen without the nasty green background. How!! Once again, POKES!

First thing is to use CLS without a number for colour. Then to set the screen colour by varying X in the POKE from 64 to 127, each different number gives a different colo(u)r, EG:- POKE &HFFBD,X.

Now for the printing part of the scheme. We use POKE &HFFBC,X if X=127 we get buff(white) writing. X is any number from 64 to 127.

Fine, we have now opened up a whole new face of the CoCo3. There are a lot of useful Pokes available. To print off a copy of the directory of a disk for a label, POKE 111,254:DIR.

You all know those times when a long basic programme gives an

OM ERROR. Well the following will help with a lot of extra memory:- POKE 25,14:
POKE3584,1: POKE25,12:
POKE26,1: POKE3072,0 .

Did you know that you could make your CoCo3 work like a CoCo2? When you use EXEC&H000:POKE&HFFDE,0, the Tandy heading up top changes to the CoCo2 mode. However not all CoCo2 programmes will work with this psuedo CoCo2 mode.

To make your programme listing go slow use, POKE359,19:
POKE360,19: POKE361,57.

To make the CoCo3 use true lower case typescript, use POKE282,0.

To reverse this use
POKE282,255.

For a cold start use
POKE113,0:EXEC&H8C18.

To prevent listing in a programme use, POKE383,158, when you enter LIST you get 36480 on the screen.

And finally for a nice full height full width orange screen with black printing
POKE359,57:POKE65314,72.

Well thats about all folks. There are many more PEEKS, POKES and EXEC's available in the specialised books! Try and explore all the multitude of Peek, Poke and Exec's. Explore the colour screens and prints there are so many many different comdinations available and these open up vast new vistas previously unknown to the average CoCo user.

Happy CoCoing from Val Stephen.

ANIMATED BUGS

BY K. KENNY

*Animated Bugs
*by Keiran Kenny

Even if you don't like bugs, you may find the animation techniques in this program interesting. The program uses "speed" GET/PUTS and dimensions enough space for twenty-five 48 by 48 rectangles. The values for the upper left corner of each rectangle are a multiple of eight, and the values for the lower right corner are one less than a multiple of eight, thus: GET(104,72)-(151,119),C. Options such as G and PSET are not needed.

The value 57 in each DIM statement in line 20 is sufficient for a 48 by 48 area on the PMODE4 screen. This is probably much less than you have been led to believe. The GET statement in line 90 stores a 48 by 48 area of blank screen for use as an eraser.

Each bug picture takes four rectangles. To take the simplest example, lines 100 to 170 draw a cockroach-like body and store it in an array labelled C. Lines 180 to 250 add the legs to the body in three different positions. The pictures are labelled D, E and F.

The same procedure is repeated in lines 270 to 1040 to draw and store a further twenty pictures. The drawing takes place "behind-the-scenes", but if you want to see the pictures being drawn, add SCREEN1,1 to the end of line 80 and delete SCREEN1,1 from line 1050.

The 52 by 52 rectangle in line 100 was for my own guidance in drawing the pictures. If you want to try substituting your own pictures, note that there must be a clearly visible margin of at least one pixel

between the edges of your picture and the sides of the rectangle. This will ensure that your picture fits into a 48 by 48 area.

Lines 1060 to 1650 put the picture groups, D - F through X - Z on the screen in succession. Each picture is moved 24 points right. Line 1670 ensures a perpetual loop.

The high speed poke is operative. Line 30 establishes the values SP and SL to suit a CoCo 3 or an earlier CoCo. If you press CLEAR while the display is running, the program will end after the last picture has been displayed and operating speed will revert to normal.

If you use a BOOT utility to run programs on your disks, you may find that this program will go no further than the text in line 70. If so, do a cold start and run BUGANIMA directly from your disk .

```
0 'ANIMATED BUGS
1 'BY KEIRAN KENNY
2 'COPYRIGHT (C) 1992
3 'BY FALSOFT, INC.
4 'RAINBOW MAGAZINE
5 'SENT 9/10/92
10 CLS
20 DIM A(57),C(57),D(57),
E(57),F(57),G(57),H(57),
I(57),J(57),K(57),L(57),
M(57),N(57),O(57),P(57),
Q(57),R(57),S(57),T(57),
U(57),V(57),W(57),X(57),
Y(57),Z(57)
30 IF PEEK(33021)=50 THEN
SP=65497:SL=65496ELSE
SP=65495:SL=65494
40 POKE SP,0
50 GOTO70
60 FOR DL=1TO100:NEXT:RETURN
70 PRINT@224,"WARNING! THIS
PROGRAM HAS BUGS! RUN IT AT
YOUR OWN RISK!"
80 PMODE4,1:COLOR0,5:PCLS
```

```

90 GET(0,0)-(47,47),A
100 LINE(102,70)-
(153,121),PSET,B
110 CIRCLE(128,112),23,,.6,.5,1
120 LINE(105,112)-
(150,112),PSET
130 CIRCLE(150,112),10,,1,.5,
.655
140 DRAW"BM145,104U3E2R2"
150 CIRCLE(149,99),1
160 PSET(146,108)
170 GET(104,72)-(151,119),C
180 FOR X=110 TO 140 STEP5:
DRAW"BM=X;,113F3":NEXT
190 GET(104,72)-(151,119),D
200 PUT(104,72)-(151,119),C
210 FOR X=110 TO 140 STEP5:
DRAW"BM=X;,113D4":NEXT
220 GET(104,72)-(151,119),E
230 PUT(104,72)-(151,119),C
240 FOR X=110 TO 140 STEP5:
DRAW"BM=X;,113G3":NEXT
250 GET(104,72)-(151,119),F
260 PUT(104,72)-(151,119),A
270 CIRCLE(128,113),23,,1.2,.5,
.75
280 DRAW"BM128,86E4R3":CIRCLE
(135,82),1:
DRAW"BM128,86R3F5M130,92M135,96G
2L3H3L3G2"
290 CIRCLE(122,113),16,,1,
.75,.98:DRAW"BM137,110R4FD2M105,
113": CIRCLE(130,89),1
300 GET(104,72)-(151,119),G
310 FOR X=108 TO 138 STEP5:
DRAW"BM=X;,113F3":NEXT
320 GET(104,72)-(151,119),H
330 PUT(104,72)-(151,119),G
340 FOR X=108 TO 138 STEP5:
DRAW"BM=X;,113D4":NEXT
350 GET(104,72)-(151,119),I
360 PUT(104,72)-(151,119),G
370 FOR X=108 TO 138 STEP5:
DRAW"BM=X;,113G3":NEXT
380 GET(104,72)-(151,119),J
390 PUT(104,72)-(151,119),A
400 CIRCLE(128,113),23,,1.5,
.5,1: LINE(105,113)-
(151,113),PSET
410 DRAW"BM116,85H3L4BM140,
85E3R4":CIRCLE(109,82),1:
CIRCLE(148,82),1
420 CIRCLE(122,89),4:PSET
(122,89):CIRCLE(134,89),4:
PSET(134,89)
430 GET(104,72)-(151,119),K
440 CIRCLE(128,98),12,,.6,0,.5
450 FOR X=108 TO 148 STEP5:

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DRAW"BM=X;,113F3":NEXT
460 GET(104,72)-(151,119),L
470 PUT(104,72)-(151,119),K
480 CIRCLE(128,103),8
490 FOR X=108 TO 148 STEP5:
DRAW"BM=X;,113D4":NEXT
500 GET(104,72)-(151,119),M
510 PUT(104,72)-(151,119),K
520 CIRCLE(128,105),12,,.6,.5,1
530 FOR X=109 TO 149 STEP5:
DRAW"BM=X;,113G3":NEXT
540 GET(104,72)-(151,119),N
550 PUT(104,72)-(151,119),A
560 DRAW"BM104,113BR2H2U8E8H8
U5ER4FD5F4"
570 CIRCLE(128,95),15,,1.2
580 LINE(106,113)-(116,113),
PSET
590 DRAW"BM116,113E4BM136,109
F4R9E2U8M143,95E8U5HL4D5G4"
600 CIRCLE(123,103),4:
CIRCLE(133,103),4:
PSET(123,103): PSET(133,103)
610 LINE(128,103)-(128,94),PSET
620 CIRCLE(128,92),2:
CIRCLE(128,96),12,,1,.6,.9
630 GET(104,72)-(151,119),O
640 FOR X=105 TO 114 STEP3:
DRAW"BM=X;,113F3":NEXT
650 FOR X=139 TO 148 STEP3:
DRAW"BM=X;,113F3":NEXT
660 GET(104,72)-(151,119),P
670 PUT(104,72)-(151,119),O
680 FOR X=106 TO 115 STEP3:
DRAW"BM=X;,113D4":NEXT
690 FOR X=140 TO 149 STEP3:
DRAW"BM=X;,113D4":NEXT
700 GET(104,72)-(151,119),Q
710 PUT(104,72)-(151,119),O
720 FOR X=107 TO 116 STEP3:
DRAW"BM=X;,113G3":NEXT
730 FOR X=141 TO 150 STEP3:
DRAW"BM=X;,113G3":NEXT
740 GET(104,72)-(151,119),R
750 PUT(104,72)-(151,119),A
760 DRAW"BM104,113BR2H2U2E2R33
E2U2H2M-30,-12"
770 CIRCLE(109,85),4,,1,.25,.75
780 LINE(110,82)-(132,78),PSET
790 LINE(107,113)-
(143,113),PSET
800 DRAW"BM143,113E5U6H4M118,
87U2M132,83BM132,78E2R3F3M146
,82M140, 84M143,87M136,86M133,
83BM140,84M+7,+2NM+3,-2M+3,+2"
810 PSET(136,79)
820 GET(104,72)-(151,119),S
830 FOR X=107 TO 142 STEP5:

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DRAW"BM=X;,113F3":NEXT
840 GET(104,72)-(151,119),T
850 PUT(104,72)-(151,119),S
860 FOR X=107 TO 142 STEP5:
DRAW"BM=X;,113D4":NEXT
870 GET(104,72)-(151,119),U
880 PUT(104,72)-(151,119),S
890 FOR X=107 TO 142 STEP5:
DRAW"BM=X;,113G3":NEXT
900 GET(104,72)-(151,119),V
910 PUT(104,72)-(151,119),A
920 CIRCLE(128,97),14,,1.3:
CIRCLE(128,96),8,,1.3,0,.5:
CIRCLE(123,91),4:
CIRCLE(133,91),4:
CIRCLE(123,91),1:
CIRCLE(133,91),1
930 LINE(128,91)-(128,99),PSET:
CIRCLE(128,101),2
940 DRAW"BM111,79F2R30E2BM122
,81U5R12D5": PAINT(128,77),0,0
950 PRESET(128,114):PRESET
(128,115)
955 FOR X=125 TO 133 STEP3:
DRAW"BM=X;,113U4":NEXT
960 GET(104,72)-(151,119),W
970 FOR X=125 TO 133 STEP3:
DRAW"BM=X;,113F3":NEXT
980 GET(104,72)-(151,119),X
990 PUT(104,72)-(151,119),W
1000 FOR X=125 TO 133 STEP3:
DRAW"BM=X;,113D4":NEXT
1010 GET(104,72)-(151,119),Y
1020 PUT(104,72)-(151,119),W
1030 FOR X=125 TO 133 STEP3:
DRAW"BM=X;,113G3":NEXT
1040 GET(104,72)-(151,119),Z
1050 PCLS:SCREEN1,1
1060 X1=0:X2=8:X3=16
1070 IF PEEK(135)=12THEN1680
1080 PUT(X1,72)-(X1+47,119),D
1090 GOSUB60:PUT(X1,72)-
(X1+47,119),A
1100 PUT(X2,72)-(X2+47,119),E
1110 GOSUB60:PUT(X2,72)-
(X2+47,119),A
1120 PUT(X3,72)-(X3+47,119),F
1130 GOSUB60:PUT(X3,72)-
(X3+47,119),A
1140 X1=X1+24:X2=X2+24:X3=X3+24
1150 IF X1>208THEN1160ELSE1080
1160 GOSUB60:PUT(X1,72)-
(X1+47,119),A
1170 X1=0:X2=8:X3=16
1180 PUT(X1,72)-(X1+47,119),H
1190 GOSUB60:PUT(X1,72)-
(X1+47,119),A
1200 PUT(X2,72)-(X2+47,119),I

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1210 GOSUB60:PUT(X2,72)-
(X2+47,119),A
1220 PUT(X3,72)-(X3+47,119),J
1230 GOSUB60:PUT(X3,72)-
(X3+47,119),A
1240 X1=X1+24:X2=X2+24:X3=X3+24
1250 IF X1>208THEN1260ELSE1180
1260 GOSUB60:PUT(X1,72)-
(X1+47,119),A
1270 X1=0:X2=8:X3=16
1280 PUT(X1,72)-(X1+47,119),L
1290 GOSUB60:PUT(X1,72)-
(X1+47,119),A
1300 PUT(X2,72)-(X2+47,119),M
1310 GOSUB60:PUT(X2,72)-
(X2+47,119),A
1320 PUT(X3,72)-(X3+47,119),N
1330 GOSUB60:PUT(X3,72)-
(X3+47,119),A
1340 X1=X1+24:X2=X2+24:X3=X3+24
1350 IF X1>208THEN1360ELSE1280
1360 GOSUB60:PUT(X1,72)-
(X1+47,119),A
1370 X1=0:X2=8:X3=16
1380 PUT(X1,72)-(X1+47,119),P
1390 GOSUB60:PUT(X1,72)-
(X1+47,119),A
1400 PUT(X2,72)-(X2+47,119),Q
1410 GOSUB60:PUT(X2,72)-
(X2+47,119),A
1420 PUT(X3,72)-(X3+47,119),R
1430 GOSUB60:PUT(X3,72)-
(X3+47,119),A
1440 X1=X1+24:X2=X2+24:X3=X3+24
1450 IF X1>208THEN1460ELSE1380
1460 GOSUB60:PUT(X1,72)-
(X1+47,119),A
1470 X1=0:X2=8:X3=16
1480 PUT(X1,72)-(X1+47,119),T
1490 GOSUB60:PUT(X1,72)-
(X1+47,119),A
1500 PUT(X2,72)-(X2+47,119),U
1510 GOSUB60:PUT(X2,72)-
(X2+47,119),A
1520 PUT(X3,72)-(X3+47,119),V
1530 GOSUB60:PUT(X3,72)-
(X3+47,119),A
1540 X1=X1+24:X2=X2+24:X3=X3+24
1550 IF X1>208THEN1560ELSE1480
1560 GOSUB60:PUT(X1,72)-
(X1+47,119),A
1570 X1=0:X2=8:X3=16
1580 PUT(X1,72)-(X1+47,119),X
1590 GOSUB60:PUT(X1,72)-
(X1+47,119),A
1600 PUT(X2,72)-(X2+47,119),Y
1610 GOSUB60:PUT(X2,72)-
(X2+47,119),A

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FOR SALE AND WANTED

This column has proven to be a *BIG SUCCESS*, there is now a market place for people who have new or used equipment/software, or perhaps have been looking for something. There is no advertising cost, so if you want to sell anything or perhaps you are looking for something in particular, let us know.

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WANTED

- . Car Sign Designer - by Zebra
(with or without plastic cover)
- . CoCo 3 Hires Screen Dump
- . Sixdrive - by Gimmesoft
- . Those Darn Marbles

J. HESTER
49 Truscott Rd
MOE VIC 3825
Phone : 051 - 271 158

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FOR SALE

16K COCO 1
Cassette
2 Joysticks
Manuals
16K COCO 1 - Keys don't work
PRICE: The lot for \$70

64K COCO 2
Joysticks PRICE : \$50
Tapes
CCR82

Mr Desmond Rae
PO Box 2076
MT ISA QLD 4825
Phone: 077 - 433486
. After 4.30pm weekdays
. After 12 noon on weekends

FOR SALE

Speed Racer (CoCo2/3) NEW - 32K
Flight Simulator II (CC3) - 128K
Microscopic Mission (CC3) - 128K

PRICE - \$20 each Inc P&P or \$50 the lot Inc P&P.

Mr Peter Morgan
Phone: 076 - 926 248

Peter is also on the lookout for the following software:

- Arcade Games - CoCo3 only
- OS9 Level II
- Car Racing - CoCo3 only
- . Programmes with various fonts
(eg. Calligrapher if compatible with DMP 105)

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FOR SALE

Stereo Music Synthesizer - new \$30
Flight Simulator - disk \$10
Shanghai - ROM pak \$10

If you would like any of the above call:

Mr Arthur Williams
67 High Street
HARRINGTON NSW 2427
Phone: 065 - 561 517

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FOR SALE AND WANTED

FOR SALE

1 x Commodore Amiga 500 with 1 Meg of chip memory.

Included in this package:

- . 20 Meg IDE Hard drive with 2 Meg of fast memory, (model A590 with SCUSI port)
- . 2 x external 3 1/2" disk drives
- . 1 x competition Pro joystick
- . 1 x Terminator joystick
- . 2 x Epyx 500 XJ joysticks
- . 1 x hardware copier called "Synchro express"
- . 1 x copy of LEMMINGS with codes
- . 20 extra games disks
- . 1 x hard disk backup
- . 10 blank disks
- . 100 disk storage box
- . Virus checkers
- . 1 x carton of books including;
 - Amiga books
 - DOS help
 - Aust Amiga Reviews
 - Plus many more - the carton is a full 14" Colour Monitor box.

PRICE: \$750 (ON0) for the lot.

Mr Desmond Rae

PO Box 2076

MT ISA QLD 4825

Phone: 077 - 433 486

. After 4.30pm weekdays

. After 12 noon on weekends

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FOR SALE

COCO 1 - 64K without monitor
Cable from computer to monitor

Books which include:

- . Getting Started With Colour Basic
- . Going Ahead With Extended Colour Basic
- . Assembly Language Programming
- . Level II Basic A Self Teaching Guide
- . Colour Scripsit
- . Operation Manual
- . Computer Learning Lab - with 8 cassettes

PRICE: \$100 the lot

Aust Rainbow:

Dec 85

Jan - Dec 86

Jan/Feb 87

Aust CoCo:

Feb - Dec 85

Jan - Dec 86

Jan - Dec 87

Jan - Mar 88

Jun - Jul 88

Oct 88

Softgold:

Mar 87 - Feb 88

Hot CoCo:

Feb 85

PRICE: \$100 the lot or \$1 per issue plus postage.

Mr. Ron Pengelly

1 Gamacks Lane

WEST KEMPSEY NSW 2440

Phone: 065 - 631850

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FOR SALE AND WANTED

WANTED

US Rainbow - Pre Feb 84
Aust Rainbow - Pre Jan 85
Aust COCO - Pre Jan 85

If you can help give John a ring on
the following number:

Mr John Steman
Phone: 045 - 703 443

□□□□□□□□□□□□□□□□□□□□□□□□
WANTED

External Modem for CoCo 3
Auto ranging 300 to 2400 Min
Contact either Fred or myself if you
can help.

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FOR SALE

Back issues of CoCo, Softgold,
Australian Rainbow and American
Rainbow. Prices from \$2 to \$8.
Contact this magazine for details.

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WANTED

Urgently required is the instructions
for Dungeons of Daggarth or the
review which appeared in the US
Rainbow July 1983 on page 220.
If you have either give me a ring on
075 - 435 821.

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GRAHAMS GRAPHICS

The following graphics programmes were submitted by our CoCo Friend, Graham Elphick. Graham has sent me quite a number of these which I will be printing in subsequent magazines. They are of particular interest to those who wish to learn more about how the CoCo works in the area of graphics. Simply type them in, save them, and then play around with the programme yourself, change the colour slots or the line statements etc to see what happens.

DINOSAUR

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0 GOTO 10
10 PCLEAR8:CLS
20 PMODE4,1:PCLS1:COLOR2:
SCREEN1,1
30 FOR Z=1 TO 28
50 LINE(0,145)-(255,145),PSET
60 LINE(79,145)-(79,140),PSET
70 LINE(79,140)-(82,137),PSET
80 LINE(82,137)-(82,122),PSET
90 LINE(95,122)-(95,136),PSET
110 LINE(97,138)-(97,145),PSET
120 LINE(172,145)-
(172,140),PSET
130 LINE(172,140)-
(175,137),PSET
150 LINE(175,137)-
(175,125),PSET
160 LINE(187,125)-
(187,135),PSET
170 LINE(187,135)-
(190,138),PSET
180 LINE(190,138)-
(190,145),PSET
190 LINE(175,132)-
(140,135),PSET
200 LINE(140,135)-
(121,135),PSET
210 LINE(121,135)-(95,126),PSET
220 LINE(82,126)-(64,95),PSET
230 LINE(33,107)-(33,115),PSET
240 LINE(33,115)-(38,120),PSET
250 LINE(38,120)-(43,120),PSET
260 LINE(43,120)-(48,115),PSET
270 LINE(48,115)-(48,107),PSET
280 LINE(48,107)-(69,90),PSET
290 LINE(33,107)-(61,75),PSET
300 CIRCLE(44,108),2
310 CIRCLE(36,108),2
320 LINE(38,116)-(42,116),PSET
330 LINE(61,75)-(85,90),PSET
340 LINE(85,90)-(122,77),PSET
350 LINE(122,77)-(149,73),PSET
360 LINE(149,73)-(176,81),PSET
370 LINE(176,81)-(193,98),PSET
380 LINE(193,98)-(230,136),PSET
390 LINE(230,136)-
(255,140),PSET
400 LINE(255,140)-
(210,143),PSET
410 LINE(210,143)-
(187,128),PSET
420 LINE(0,54)-(48,36),PSET
430 LINE(48,36)-(76,36),PSET
440 LINE(76,36)-(127,67),PSET
450 LINE(109,56)-(152,43),PSET
460 LINE(152,43)-(181,43),PSET
470 LINE(181,43)-(223,75),PSET
480 LINE(206,62)-(243,39),PSET
490 LINE(243,39)-(255,39),PSET
500 LINE(138,34)-(147,40),PSET
510 LINE(147,40)-(182,40),PSET
520 LINE(182,40)-(194,36),PSET
530 LINE(194,36)-(185,30),PSET
540 LINE(185,30)-(150,30),PSET
550 LINE(150,30)-(138,34),PSET
700 PMODE4,5:PCLS1:COLOR2:
SCREEN1,1
710 FOR Z=1 TO 27
720 NEXT
800 LINE(0,145)-(211,145),PSET
805 LINE(221,145)-
(255,145),PSET
810 LINE(79,145)-(79,140),PSET
820 LINE(79,140)-(82,137),PSET
830 LINE(82,137)-(82,122),PSET
840 LINE(95,122)-(95,136),PSET
850 LINE(95,136)-(97,138),PSET
860 LINE(97,138)-(97,145),PSET
870 LINE(172,145)-
(172,140),PSET
880 LINE(172,140)-
(175,137),PSET
890 LINE(175,137)-
(175,125),PSET
900 LINE(187,125)-
(187,135),PSET
910 LINE(187,135)-
(190,138),PSET
920 LINE(190,138)-
(190,145),PSET
930 LINE(175,132)-
(140,135),PSET
940 LINE(140,135)-
(121,135),PSET
950 LINE(121,135)-(95,126),PSET
960 LINE(82,126)-(64,95),PSET
970 LINE(63,95)-(38,69),PSET
980 LINE(45,65)-(36,71),PSET
990 LINE(36,71)-(27,71),PSET
1000 LINE(27,71)-(24,67),PSET
1010 LINE(24,67)-(24,63),PSET
1020 LINE(24,63)-(27,60),PSET
1030 LINE(27,60)-(39,56),PSET

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1040 LINE(39,56)-(44,56),PSET
1050 LINE(45,56)-(61,75),PSET
1060 CIRCLE(40,59),2
1070 LINE(26,69)-(31,66),PSET
1080 LINE(61,75)-(85,90),PSET
1090 LINE(85,90)-(122,77),PSET
1100 LINE(122,77)-(149,73),PSET
1110 LINE(149,73)-(176,81),PSET
1120 LINE(176,81)-
(220,139),PSET
1140 LINE(220,139)-
(224,160),PSET
1150 LINE(224,160)-
(210,143),PSET
1160 LINE(210,143)-
(187,128),PSET
1170 LINE(0,54)-(48,36),PSET
1180 LINE(48,36)-(76,36),PSET
1190 LINE(76,36)-(127,67),PSET
1200 LINE(109,56)-(152,43),PSET
1210 LINE(152,43)-(181,43),PSET
1220 LINE(181,43)-(223,75),PSET
1230 LINE(206,62)-(243,39),PSET
1240 LINE(243,39)-(255,39),PSET
1250 LINE(144,8)-(152,3),PSET
1260 LINE(152,3)-(184,3),PSET
1270 LINE(184,3)-(188,8),PSET
1280 LINE(188,8)-(183,13),PSET
1290 LINE(183,13)-(152,13),PSET
1300 LINE(152,13)-(144,8),PSET
1310 FOR D=1 TO 30
1320 PMODE4,1:SCREEN1,1
1330 FOR T=1 TO 100:NEXT T
1340 PMODE4,5:SCREEN1,1
1350 FOR T=1 TO 100:NEXT T
1360 NEXT D
1370 GOTO 50

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CUCKOO

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0 GOTO 10
10 PCLEAR8:CLS
20 PMODE4,1:PCLS1:COLOR2:
SCREEN1,1
30 FOR Z=1 TO 28
50 LINE(108,107)-(144,107),PSET
60 LINE(144,107)-(144,75),PSET
70 LINE(108,107)-(108,75),PSET
80 LINE(108,75)-(126,57),PSET
90 LINE(126,57)-(144,74),PSET
100 LINE(126,58)-(126,107),PSET
110 LINE(131,65)-(131,107),PSET
120 LINE(137,70)-(137,107),PSET
130 LINE(141,74)-(141,107),PSET
140 LINE(120,64)-(120,107),PSET
150 LINE(115,69)-(115,107),PSET
160 LINE(126,13)-(181,68),PSET
170 LINE(126,13)-(71,68),PSET
180 LINE(176,63)-(176,191),PSET
190 LINE(76,63)-(76,191),PSET
200 LINE(76,191)-(176,191),PSET

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210 CIRCLE(126,152),29
220 CIRCLE(126,152),26
230 LINE(71,68)-(62,68),PSET
240 LINE(62,68)-(126,4),PSET
250 LINE(126,4)-(190,68),PSET
260 LINE(190,68)-(181,68),PSET
270 PAINT(181,64),2,2
280 PAINT(141,130),2,2
285 CIRCLE(126,152),21
290 CIRCLE(126,132),4
300 CIRCLE(126,173),4
310 CIRCLE(147,152),4
320 CIRCLE(106,152),4
330 CIRCLE(126,152),4
340 LINE(126,138)-
(123,150),PSET
350 LINE(129,150)-
(126,138),PSET
360 LINE(138,152)-
(128,149),PSET
370 LINE(128,155)-
(138,152),PSET
380 PAINT(126,146),2,2
390 PAINT(132,152),2,2
400 LINE(176,107)-
(186,107),PSET
410 LINE(186,107)-
(255,191),PSET
420 LINE(255,191)-
(175,191),PSET
430 LINE(76,107)-(66,107),PSET
440 LINE(66,107)-(0,191),PSET
450 LINE(0,191)-(76,191),PSET
460 CIRCLE(55,155),14
470 CIRCLE(55,155),11
480 PAINT(71,155),2,2
490 CIRCLE(200,155),14
500 CIRCLE(200,155),11
510 PAINT(179,155),2,2
700 PMODE4,5:PCLS1:COLOR2:
SCREEN1,1
710 FOR Z=1 TO 27
720 NEXT
800 LINE(108,107)-
(144,107),PSET
810 LINE(144,107)-(144,75),PSET
820 LINE(108,107)-(108,75),PSET
830 LINE(108,75)-(126,57),PSET
840 LINE(126,57)-(144,74),PSET
850 LINE(144,74)-(161,57),PSET
860 LINE(161,57)-(161,107),PSET
870 LINE(161,107)-
(144,107),PSET
880 LINE(108,75)-(91,57),PSET
890 LINE(91,57)-(91,107),PSET
900 LINE(91,107)-(108,107),PSET
910 LINE(104,73)-(104,107),PSET
920 LINE(99,68)-(99,107),PSET
930 LINE(95,63)-(95,107),PSET
940 LINE(157,63)-(157,107),PSET
950 LINE(152,67)-(152,107),PSET
960 LINE(148,71)-(148,107),PSET

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970 LINE(126,13)-(181,68),PSET
980 LINE(126,13)-(71,68),PSET
990 LINE(176,63)-(176,191),PSET
1000 LINE(76,63)-(76,191),PSET
1010 LINE(76,191)-
(176,191),PSET
1020 CIRCLE(126,152),29
1030 CIRCLE(126,152),26
1040 LINE(71,68)-(62,68),PSET
1050 LINE(62,68)-(126,4),PSET
1060 LINE(126,4)-(190,68),PSET
1070 LINE(190,68)-(181,68),PSET
1080 PAINT(181,64),2,2
1090 PAINT(141,130),2,2
1100 CIRCLE(126,132),4
1110 CIRCLE(126,173),4
1120 CIRCLE(147,152),4
1130 CIRCLE(106,152),4
1140 CIRCLE(126,152),4
1150 LINE(126,138)-
(123,150),PSET
1160 LINE(129,150)-
(126,138),PSET
1170 LINE(138,152)-
(128,149),PSET
1180 LINE(128,155)-
(138,152),PSET
1190 PAINT(126,146),2,2
1195 CIRCLE(126,152),21
1200 PAINT(132,152),2,2
1210 LINE(176,107)-
(186,107),PSET
1220 LINE(186,107)-
(255,191),PSET
1230 LINE(255,191)-
(175,191),PSET
1240 LINE(76,107)-(66,107),PSET
1250 LINE(66,107)-(0,191),PSET
1260 LINE(0,191)-(76,191),PSET
1270 CIRCLE(55,155),14
1280 CIRCLE(55,155),11
1290 PAINT(71,155),2,2
1300 CIRCLE(200,155),14
1310 CIRCLE(200,155),11
1320 PAINT(179,155),2,2
1330 CIRCLE(128,90),14
1340 CIRCLE(128,80),10
1350 CIRCLE(124,77),4
1360 CIRCLE(132,77),4
1370 LINE(128,79)-(128,88),PSET
1380 PAINT(128,94),2,2
1390 PAINT(128,73),2,2
1400 LINE(137,99)-
(144,106),PSET
1410 LINE(119,99)-
(111,107),PSET
1420 FOR D=1 TO 30
1430 PMODE4,1:SCREEN1,1
1440 FOR T=1 TO 100:NEXT T
1450 PMODE4,5:SCREEN1,1
1460 FOR T=1 TO 100:NEXT T
1470 NEXT D

```

```
1480 GOTO 700
```

FISHING

```

10 CLEAR2000:GOTO5200
20 DIMA(98),B(98)
30 PMODE4,1:COLOR0,5:PCLS:
SCREEN1,1
40 GET(0,0)-(55,7),A
50 LINE(62,161)-(62,108),PSET
60 LINE(62,108)-(34,79),PSET
70 LINE(34,79)-(34,72),PSET
80 LINE(34,72)-(45,72),PSET
90 LINE(45,72)-(78,105),PSET
100 LINE(78,105)-(78,60),PSET
110 LINE(78,60)-(54,36),PSET
120 LINE(54,36)-(54,26),PSET
130 LINE(54,26)-(63,26),PSET
140 LINE(63,26)-(81,44),PSET
150 LINE(81,44)-(107,17),PSET
160 LINE(107,17)-(117,17),PSET
170 LINE(117,17)-(117,25),PSET
180 LINE(117,25)-(90,52),PSET
190 LINE(90,52)-(90,78),PSET
200 LINE(90,78)-(119,49),PSET
210 LINE(119,49)-(126,49),PSET
220 LINE(126,49)-(126,58),PSET
230 LINE(126,58)-(90,94),PSET
240 LINE(90,94)-(90,127),PSET
250 LINE(90,127)-(121,96),PSET
260 LINE(121,96)-(130,96),PSET
270 LINE(130,96)-(130,101),PSET
280 LINE(130,101)-(79,153),PSET
290 LINE(79,153)-(86,161),PSET
300 LINE(86,161)-(62,161),PSET
310 PAINT(75,150),2,2
320 LINE(62,144)-(0,144),PSET
330 LINE(88,144)-(255,144),PSET
800 LINE(62,161)-(62,108),PSET
810 LINE(62,108)-(34,79),PSET
820 LINE(34,79)-(34,72),PSET
830 LINE(34,72)-(45,72),PSET
840 LINE(45,72)-(78,105),PSET
850 LINE(78,105)-(78,60),PSET
860 LINE(78,60)-(54,36),PSET
870 LINE(54,36)-(54,26),PSET
880 LINE(54,26)-(63,26),PSET
890 LINE(81,44)-(107,17),PSET
900 LINE(107,17)-(117,17),PSET
910 LINE(117,17)-(117,25),PSET
920 LINE(117,25)-(90,52),PSET
930 LINE(90,52)-(90,78),PSET
940 LINE(90,78)-(119,49),PSET
950 LINE(119,49)-(126,49),PSET
960 LINE(126,49)-(126,58),PSET
970 LINE(126,58)-(90,94),PSET
980 LINE(90,94)-(90,127),PSET
990 LINE(90,127)-(121,96),PSET
1000 LINE(121,96)-(130,96),PSET
1010 LINE(130,96)-
(130,101),PSET

```

```

1020 LINE(130,101)-
(79,153),PSET
1030 LINE(79,153)-(86,161),PSET
1040 LINE(86,161)-(62,161),PSET
1050 PAINT(75,150),2,2
1060 LINE(62,144)-(0,144),PSET
1070 LINE(88,144)-
(255,144),PSET
5000 K$=INKEY$:IF
K$<>"P"THEN5000
5010 X=128:Y=96:N=1
5020 IF PEEK(341)=247THEN Y=Y-N
5030 IF PEEK(342)=247THEN Y=Y+N
5040 IF PEEK(343)=247THEN X=X-N
5050 IF PEEK(344)=247THEN X=X+N
5060 IF PEEK(338)=247THEN
N=4ELSE N=1
5070 IF PEEK(135)=32THEN5140
5080 IF X<0THEN X=0
5090 IF X>255THEN X=255
5100 IF Y<0THEN Y=0
5110 IF Y>191THEN Y=191
5120 DR=PPOINT(X,Y)
5130 PSET(X,Y,0):FOR D=1TO100:
NEXT: PSET(X,Y,DR): GOTO5180
5140 POKE135,0:GET(0,0)-
(55,7),B:PUT(0,0)-
(55,7),A:B=0:C=7:W$=STR$(X)+
"+STR$(Y)
5150 DRAW"BM"+STR$(B)+
", "+STR$(C)
5160 COLOR0:FOR ZB=1TO LEN(W$)
:DRAW L$(ASC(MID$(W$,ZB,1)))+
"BR2":NEXT
5170 EXEC44539:PUT(0,0)-
(55,7),B
5180 GOTO5020
5190 POKE65496,0:RGB:CLS:END
5200 DIML$(57)
5210 L$(48)="U4R3D4NL3":
L$(49)="R2LU4NGBRBD4":
L$(50)="BU4R3D2L3D2R3":
L$(51)="R3U2NL2U2NL3BD4":
L$(52)="BUNU3R2NUNDRBD":
L$(53)="R3U2L3U2R3BD4":
L$(54)="NR3U4D2R3D2":
L$(55)="BU4R3DG3BR3":
L$(56)="BRHEHERFGNLFGNLBR":
L$(57)="BR3U4L3D2R3D2"
5220 GOTO20

```

HORSE

```

1 HSCREEN2:PALETTERGB:HCLS11:
HCOLOR8
2 FORZ=1TO 180
3 READ A,B,C,D
4 HLINE(A,B)-(C,D),PSET
5 NEXT
7 DATA 0, 16, 0, 191
8 DATA 0, 191, 255, 191

```

```

9 DATA 255, 191, 255, 16
10 DATA 255, 16, 0, 16
11 DATA 4, 19, 4, 172
12 DATA 4, 172, 18, 186
13 DATA 18, 186, 235, 186
14 DATA 235, 186, 250, 171
15 DATA 250, 171, 250, 18
16 DATA 250, 18, 5, 18
17 DATA 5, 18, 4, 18
18 DATA 4, 18, 4, 21
19 DATA 147, 175, 152, 175
20 DATA 152, 175, 155, 172
21 DATA 155, 172, 153, 157
22 DATA 153, 157, 153, 137
23 DATA 153, 137, 155, 135
24 DATA 155, 135, 155, 130
25 DATA 155, 130, 153, 128
26 DATA 153, 128, 157, 108
27 DATA 148, 117, 160, 105
28 DATA 160, 105, 167, 105
29 DATA 167, 105, 172, 111
30 DATA 172, 111, 163, 120
31 DATA 163, 120, 169, 120
32 DATA 169, 120, 183, 110
33 DATA 183, 110, 169, 96
34 DATA 169, 96, 156, 96
35 DATA 156, 96, 147, 105
36 DATA 147, 105, 141, 99
37 DATA 141, 99, 141, 108
38 DATA 141, 108, 148, 118
39 DATA 158, 95, 159, 91
40 DATA 159, 91, 150, 76
41 DATA 150, 76, 141, 76
42 DATA 141, 76, 137, 80
43 DATA 137, 80, 133, 76
44 DATA 133, 76, 123, 76
45 DATA 123, 76, 117, 97
46 DATA 117, 97, 123, 129
47 DATA 123, 129, 121, 131
48 DATA 121, 131, 121, 135
49 DATA 121, 135, 123, 138
50 DATA 123, 138, 125, 166
51 DATA 125, 166, 122, 174
52 DATA 122, 174, 132, 174
53 DATA 132, 174, 130, 165
54 DATA 130, 165, 133, 162
55 DATA 133, 162, 127, 137
56 DATA 127, 137, 129, 135
57 DATA 129, 135, 129, 131
58 DATA 129, 131, 127, 129
59 DATA 127, 129, 142, 110
60 DATA 142, 110, 149, 128
61 DATA 149, 128, 146, 130
62 DATA 146, 130, 146, 135
63 DATA 146, 135, 149, 138
64 DATA 149, 138, 149, 161
65 DATA 149, 161, 145, 165
66 DATA 145, 165, 148, 168
67 DATA 148, 168, 147, 175
68 DATA 143, 76, 138, 60
69 DATA 138, 60, 134, 50
70 DATA 134, 50, 139, 44

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71 DATA 139, 44, 139, 42
 72 DATA 139, 42, 129, 46
 73 DATA 129, 46, 127, 44
 74 DATA 127, 44, 118, 44
 75 DATA 118, 44, 116, 46
 76 DATA 116, 46, 109, 43
 77 DATA 109, 43, 109, 45
 78 DATA 109, 45, 114, 52
 79 DATA 114, 52, 112, 54
 80 DATA 112, 54, 111, 65
 81 DATA 123, 67, 121, 65
 82 DATA 121, 65, 109, 65
 83 DATA 109, 65, 107, 67
 84 DATA 107, 67, 104, 67
 85 DATA 104, 67, 104, 71
 86 DATA 104, 71, 107, 71
 87 DATA 107, 71, 107, 74
 88 DATA 107, 74, 110, 78
 89 DATA 110, 78, 119, 78
 90 DATA 119, 78, 125, 72
 91 DATA 125, 72, 128, 72
 92 DATA 128, 72, 128, 68
 93 DATA 128, 68, 126, 68
 94 DATA 128, 68, 130, 60
 95 DATA 123, 76, 122, 74
 96 DATA 118, 74, 112, 74
 97 DATA 107, 69, 109, 69
 98 DATA 123, 70, 125, 70
 99 DATA 118, 46, 118, 49
 100 DATA 121, 49, 121, 45
 101 DATA 124, 45, 124, 49
 102 DATA 127, 49, 127, 45
 103 DATA 135, 52, 135, 66
 104 DATA 137, 68, 137, 62
 105 DATA 139, 62, 139, 71
 106 DATA 4, 122, 122, 122
 107 DATA 133, 122, 147, 122
 108 DATA 155, 122, 251, 122
 109 DATA 250, 106, 209, 106
 110 DATA 209, 106, 209, 122
 111 DATA 202, 122, 202, 106
 112 DATA 202, 106, 178, 106
 113 DATA 119, 106, 74, 106
 114 DATA 74, 106, 74, 122
 115 DATA 65, 122, 65, 106
 116 DATA 65, 106, 4, 106
 117 DATA 4, 100, 65, 100
 118 DATA 65, 100, 65, 97
 119 DATA 65, 97, 75, 97
 120 DATA 75, 97, 75, 100
 121 DATA 75, 100, 118, 100
 122 DATA 173, 100, 202, 100
 123 DATA 202, 100, 202, 97
 124 DATA 202, 97, 211, 97
 125 DATA 211, 97, 211, 100
 126 DATA 211, 100, 250, 100
 127 DATA 3, 89, 44, 89
 128 DATA 44, 89, 44, 67
 129 DATA 47, 67, 4, 67
 130 DATA 4, 64, 49, 64
 131 DATA 49, 64, 52, 68
 132 DATA 52, 68, 48, 68

133 DATA 48, 68, 47, 67
 134 DATA 48, 68, 48, 89
 135 DATA 48, 89, 69, 89
 136 DATA 69, 89, 69, 68
 137 DATA 69, 68, 50, 68
 138 DATA 51, 70, 67, 70
 139 DATA 67, 73, 52, 73
 140 DATA 50, 76, 66, 76
 141 DATA 69, 78, 51, 78
 142 DATA 49, 81, 66, 81
 143 DATA 68, 83, 50, 83
 144 DATA 49, 85, 66, 85
 145 DATA 68, 87, 51, 87
 146 DATA 49, 64, 38, 53
 147 DATA 38, 53, 4, 53
 148 DATA 6, 56, 38, 56
 149 DATA 41, 59, 7, 59
 150 DATA 7, 62, 44, 62
 151 DATA 4, 41, 18, 27
 152 DATA 18, 27, 29, 27
 153 DATA 29, 27, 47, 45
 154 DATA 47, 45, 47, 39
 155 DATA 47, 39, 51, 35
 156 DATA 51, 35, 72, 56
 157 DATA 72, 56, 72, 51
 158 DATA 72, 51, 88, 67
 159 DATA 88, 67, 84, 72
 160 DATA 84, 72, 101, 89
 161 DATA 101, 89, 69, 89
 162 DATA 100, 89, 119, 91
 163 DATA 159, 91, 250, 87
 164 DATA 219, 88, 205, 74
 165 DATA 205, 74, 215, 74
 166 DATA 215, 74, 200, 59
 167 DATA 200, 59, 200, 43
 168 DATA 200, 43, 212, 30
 169 DATA 212, 30, 212, 40
 170 DATA 212, 40, 229, 24
 171 DATA 229, 24, 229, 17
 172 DATA 201, 42, 141, 34
 173 DATA 141, 34, 132, 25
 174 DATA 132, 25, 94, 51
 175 DATA 106, 43, 76, 33
 176 DATA 76, 33, 57, 43
 177 DATA 39, 72, 14, 72
 178 DATA 14, 72, 14, 84
 179 DATA 14, 84, 38, 84
 180 DATA 38, 84, 38, 72
 181 DATA 35, 81, 35, 74
 182 DATA 35, 74, 17, 74
 183 DATA 17, 74, 17, 81
 184 DATA 17, 81, 35, 81
 185 DATA 25, 81, 25, 76
 186 DATA 43, 89, 49, 89
 188 HCIRCLE(127, 53), 2
 189 HCIRCLE(120, 53), 2
 190 HPAINT(247, 103), 8, 8
 191 HPAINT(112, 103), 8, 8
 192 HPAINT(2, 103), 3, 8
 193 HPAINT(46, 86), 0, 8
 194 HPAINT(76, 86), 0, 8
 195 HPAINT(5, 5), 8, 8

```

196 HPAINT(29,25),5,8
197 HPAINT(245,25),0,8
198 HPAINT(200,60),6,8
199 HPAINT(15,60),3,8
200 HPAINT(15,66),1,8
201 HPAINT(27,78),5,8
202 HPAINT(20,83),1,8
203 HPAINT(62,86),5,8
204 HPAINT(200,110),1,8
205 HPAINT(240,110),1,8
206 HPAINT(240,99),1,8
207 HPAINT(30,99),1,8
208 HPAINT(30,110),1,8
209 HPAINT(110,110),1,8
210 HPAINT(139,117),1,8
211 HPAINT(30,178),0,8
300 GOTO 300

```

NATIONAL OS9 USER GROUP

The National OS9 User Group is based in Brisbane and caters for those CoCo users who are well into OS9/OSK. They produce a monthly newsletter and have an extensive library for the use of members.

Subscriptions to the magazine are only \$18 per year, (the same as CoCo-Link) and at this price is well worth it if you wish to keep up to date in the world of OS9.

The National OS9 User Group can be contacted by phone or mail as follows;

```

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Don Berrie       (07)375 1284

```

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 Gordon Bentzen
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They are based on the Mornington peninsular in Melbourne and can be contacted by phoneing
 Greg MacKenzie (059)838 991
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YANCC	YTZCARD	

GRAPHICS DISK 049 =====

GFX CARTOON/CHARACTERS =====

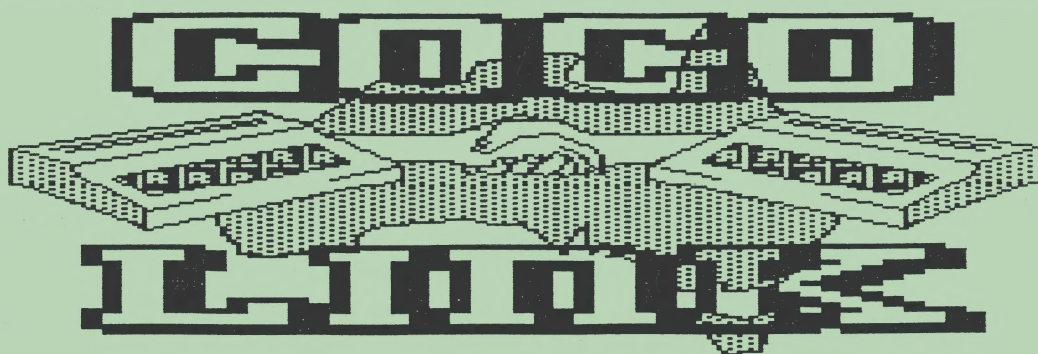
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Do you know of the existence of a user group in your area or are you considering starting one up again? Let me know the details including the contact names and phone numbers, meeting place, times etc, and I will print it in this magazine.
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